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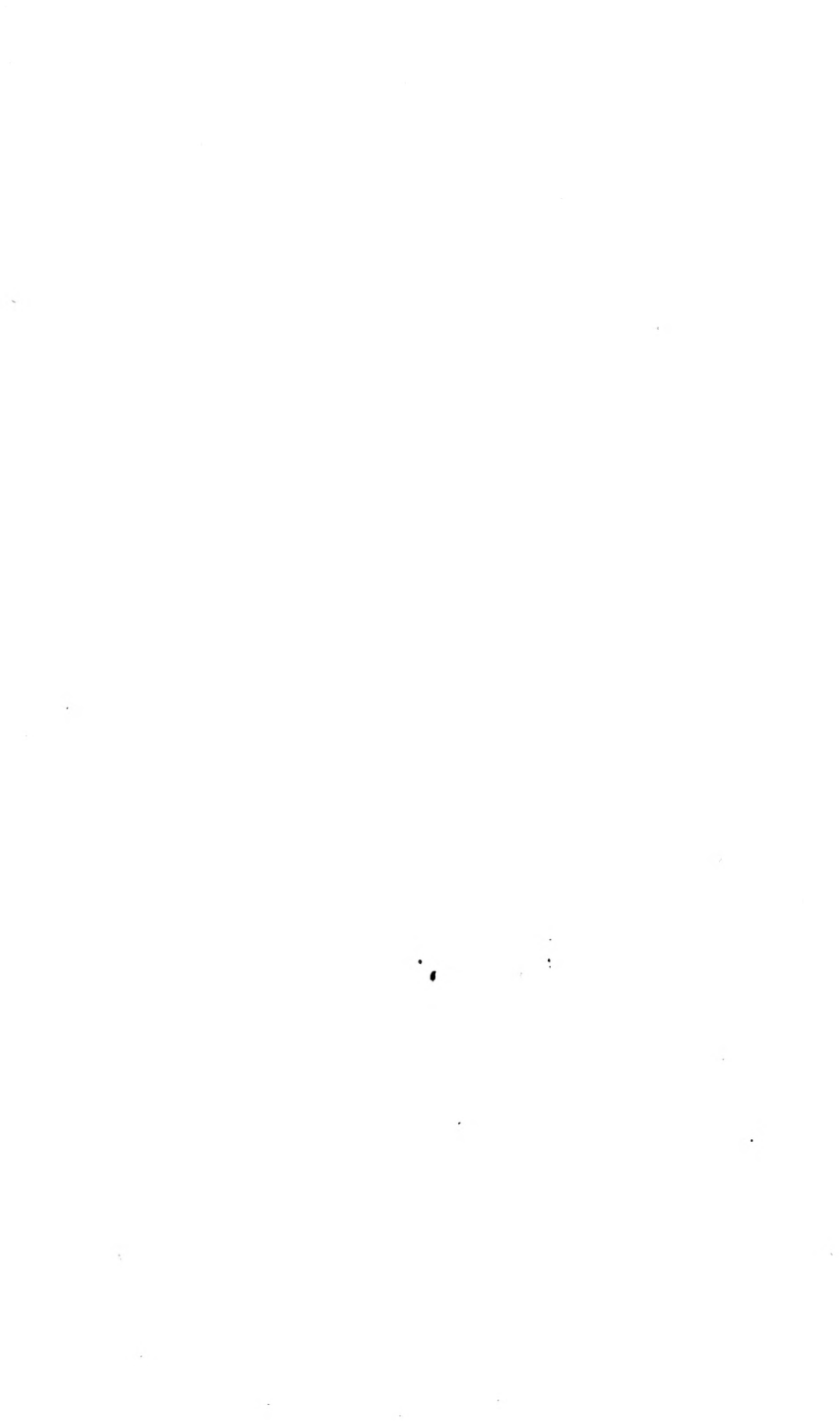


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THE

Massachusetts Agricultural

REPOSITORY and JOURNAL.

VOLUME VII.

CONDUCTED BY THE TRUSTEES OF THE MASSACHUSETTS AGRICULTURAL
SOCIETY.

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MASSACHUSETTS
AGRICULTURAL JOURNAL.

Vol. VII.]

JANUARY, 1822.

[No. I.

AN ADDRESS DELIVERED BEFORE THE MASSACHUSETTS AGRICULTURAL SOCIETY AT THE BRIGHTON CATTLE SHOW, 17th Oct. 1821. By HENRY COLMAN.

GENTLEMEN OF THE AGRICULTURAL SOCIETY,

AND FELLOW CITIZENS,

I SHOULD have been glad, on this occasion, to have confined myself to the discussion of some single topic, connected with agriculture or domestic economy ; but the time allowed me to prepare for this duty, has been much too short to do this in a manner satisfactory to you or myself. I must therefore be permitted to take a wider range ; and here I beg leave, with all possible respect, to suggest to the Trustees of this Institution, that in general, and with the exception of those few distinguished cultivators, whom I have the honour to succeed in this duty, if they demand a crop that is worth harvesting, they should give us an opportunity to prepare the ground and sow the seed at least as early as the preceding spring ; but where every thing is to be done by forcing, they must be satisfied with that, which, through their great clemency, may answer for the occasion, but, as we are accustomed to say, ‘will not answer to keep.’ All I can do is to ask you to go with me into an old field, which we have often traversed, and determine what is best to be done with it ; what parts it is expedient at once to break up ; and by what means we may redeem it from its

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present sterility ; what enemies we have to contend with, more injurious to the farmers prosperity than the Canada thistle ; and in fine, how we can render that, which is often offensive by its desolation, as beautiful and productive as God designed it should be.

I begin then by inquiring, What is essential to a farmer's prosperity ? We will stop a moment to determine, what we mean by a farmer's prosperity. I do not intend therefore merely his getting rich. Under certain restrictions, the acquisition of wealth is as much a duty as any thing else. It is a most important moral obligation, to provide by honest means for those, whom God has cast upon our care, and to increase our means of doing good in the community ; to these ends property is essential, and may be successfully applied. But where a man has no other object of pursuit than to be rich, and avarice becomes his ruling passion, he will not be happy, and is most likely to become dishonest. That farmer is prosperous, who is able by his own personal labour, and the produce of his husbandry, to provide for the ordinary wants of himself and his family ; to give his children a suitable education and establishment, in that situation in life, in which they are likely to be placed ; to keep himself free from the curse of debt and mortgage ; to maintain the character and assert the rights of an independent freeholder ; to contribute something every year to the improvement of his estate, and to that fund in reserve, which every prudent man ought, as far as possible, to provide against a season, when the accidents of life or the infirmities of old age may render it necessary to repose from his labours and cares. This is all the prosperity which a reasonable farmer ought to expect or wish ; and further than this, the acquisition of property and the exemption from constant care and hard labour are not to be desired. The condition of the man, whose situation I have now described, is favoured and enviable. It is a common complaint among farmers, who, Wesley says, I think unjustly, are more apt to

complain than any other class of men, that agriculture is an unprofitable business ; and there is no doubt that the value of the produce of our labour is not proportioned to the price of that labour ; an evil which, as our population increases, will rectify itself. But even in the present condition of things among us, if agriculture will not make us rich, it will be found, where it is properly managed, the source of as much prosperity as reasonable men ought to desire. I have myself known so many instances of such successful husbandry, in parts of the country remote from market, and where the soil is extremely rough and unpromising ; instances in which, men, who began life with no other property than the frock on their backs, and the spade in their hands, have brought up and well educated numerous families, and acquired not only a competency but an independency, that there can remain no doubt on the subject. Let us inquire then what are the means most likely to ensure success to the farmer ? Next, what circumstances are most likely to defeat his success ? I will endeavour to be as brief as possible, because a long talk in the morning is a violation of one of the most important rules of domestic economy. However, we have it from high authority, there is a time to speak as well as a time to keep silence.

The way to wealth, says DR. FRANKLIN, is as plain as the way to market. The whole science of getting rich is comprehended in two words, industry and frugality. These indeed are the farmers best friends ; and with these, under the blessing of providence, he may command success. This is no new discovery. The farmer with us must labour ; in our climate the earth gives us nothing without cultivation. This is not an evil, but a blessing. The health is preserved, the powers of the body and mind are strengthened, our capacity for enjoyment is increased by labour ; and constant useful and honest engagement is an unfailing source of satisfaction and pleasure. The most important inquiry to the farmer is, how he may best apply

this labour? An obvious defect in our system of husbandry, which has been often adverted to, but of which we cannot be too often reminded until there ceases to be any occasion for the remark, is the large size of our farms, compared with the amount of labour, which we are able to bestow upon them. We apply little labour to a great deal of land; the rule ought to be reversed; and we should apply much labour to little land. The same labour and manure, which is commonly spent upon two acres, if applied to one acre of ground, would often give double the crop and leave the land in better condition. A farmer should not therefore be so solicitous to enlarge his farm, as he should be to cultivate what he has, to as high degree as it is capable of being cultivated with advantage; this should form the limits of his desires. His farm should be proportioned to the quantity of labour which he can give to it; and until he has discovered that more labour would be actually injurious or useless, he need not desire the extension of his territories. But suppose, you say, that his farm is already according to this rule much too large; what shall he do with it? I answer, if he cannot or will not sell it, it would be better to let a part of it lie waste; or if his pride is too much concerned to do this, let him plant it with acorns, or walnuts, or chesnuts, or beachnuts, or locusts, a branch of agriculture, if so it may be called, to which little attention has been paid among us; and which would in many cases be an appropriation of a part of our land, highly productive to those who are to come after us. An early attention to this subject is strongly urged by common prudence, when we take into view the serious want of timber and fuel to which we must presently be subjected, if this provision is longer delayed; unless we choose to be governed by the *benevolent* principle which some man is said to have avowed, 'who would do nothing for posterity because posterity had done nothing for him.'

The next subject of importance to the farmer is manure. The turning up and breaking the soil thoroughly, the reducing it into fine parts and keeping it light and loose, the exposure of it to the sun, and air, and frost, and dew, are all of the first importance ; but tillage will not do every thing. Manure is essential to the growth of vegetables as supplying a considerable proportion of their nourishment ; and as exciting their powers to receive, and the powers of the earth on its part to supply, this nourishment. It is a prominent defect in our agriculture, that our lands are not enough manured. We have not sufficient manure ; and what we have, we spread over too great a surface. The remedy for the last error is obviously within our power ; we must cultivate no more land than what we can manure well ; and, by well, I mean, not as much, in the cant phrase, *as will do*, but as much as the land will bear. We may apply more than is necessary ; but there is no occasion to give our farmers a caution on this head. We may apply it improperly, at an improper season, in an unfit state, to a crop and soil to which the kind of manure, which we apply, is not adapted. These matters must be determined by inquiry and experiment, of which we ought to avail ourselves. But the great evil is a want of manure ; and this want might on almost every farm be supplied by means within the farmer's own power. On the greater part of the farms in the country, with the exception of those in the immediate neighbourhood of our large towns, where the subject is better understood, it is not extravagant to say, that not a third part of the manure is made, which might be made. Very few of them have any thing like a compost heap ; the night soil is not used ; the drainings of the sink are suffered to waste themselves on the ground in a manner highly offensive to the sight and smell, and are considered of no farther value than as supplying a spot for the growth of a few cucumbers ; in but few instances is any pains taken for the preservation of the stale of the cattle ; the place of deposit

for the manure is seldom covered, and it is often so situated, as that the greater part is wasted by its exposure to the sun and rain; in many places the farmer suffers his swine to range at large in the highways; and the tops of his potatoes and other vegetables are wasted on the place where they grew; and the scrapings of decayed leaves and chips, and the deposits of pond holes and ditches are deemed not worth the gathering. In all these particulars and many others, which it would be easy to enumerate, the farmer is obviously neglecting and wasting his most valuable resources.

Next to labour and manure, frugality in living is essential to a farmer's success. It is not necessary that on this subject I should be particular; but there are many things in our habits and manners, which might be amended. There are few of our farmers, who, if they will look into the account of their family expenses, and every prudent man will keep an exact account, will not discover, that foreign luxuries constitute a very considerable item of expenditure; and it would seem a most important rule for every farmer, to live as far as possible within his own resources; to depend upon the produce of his farm for the subsistence of his family, as far as it can be applied to this purpose. A good farm, if discreetly managed, will supply almost every thing that is necessary in this respect; and the produce of a farm, thus used, is of more value to the farmer than to send it to market. There is one topick connected with this subject on which we cannot be too often admonished, that is, our extravagance in the use of fuel. We are in this respect extremely wasteful. It seems highly immoral, in many parts of our country, to consume more wood than is necessary, when we consider with what difficulty for a long time among us the waste of wood will be supplied; and how greatly the burdens of the poor are increased by extravagance in this matter on the part of the rich. We have yet much to learn on this subject in the construction of

our houses, of our fire places, of our apparatus for cooking, and in the proper management and expenditure of our fuel. 'I have ascertained,' says Judge Cooper, who is well qualified to speak on this subject, 'that charcoal used and not wasted will save three fourths of the expense of cooking in a kitchen. When wood is charred, nothing is driven off but acid and water, which are incombustible; hence if you weigh a piece of wood equal to one pound, and weigh a piece of charcoal of the same size equal to a quarter of a pound, you will find that you are at the expense in a common fire of burning previously a sufficient quantity of fuel to drive off three quarters of a pound, the difference in weight of incombustible fluid before the piece of wood becomes fuel itself. One dollar in charcoal in the common shallow French cooking stoves, will go further in cooking, broiling, frying, boiling, stewing, and baking, than four dollars in wood in a common kitchen fire place. In charcoal also, from a diminution of weight, the expense of carriage is materially lessened, and you can afford to get it from a cheaper country.'

All that I have undertaken on this occasion is to suggest a few hints, which I submit to the consideration of intelligent and practical men to use as they deem expedient; I therefore pass to another matter, which is conducive, if not essential, to the farmer's prosperity, I mean knowledge, skill, and experience. Agriculture is an important branch of natural philosophy. Experience is always a safer guide and a more competent instructor than theory; but we owe much in agriculture to the inquiries of intelligent and learned men. The nature and properties of different soils, the composition and uses of various manures, the organization of plants, the influence of the atmosphere, and of light and heat upon the growth of vegetables, the structure of animals and the improvement of the breed of animals, are all matters of profound philosophical investigation; and much as common farmers are disposed in general to deride learn-

ing in an agriculturist, they are indebted to the efforts of learned men for almost all the improvements which have been made in agriculture and domestic economy. Agriculture indeed is a science and an art to be studied and learnt as much as any other art or science; without knowledge and experience, men cannot expect to be successful in it; they labour to great disadvantage; and can do nothing more than pursue the same track, which their ancestors for centuries have trodden before them.

The farmer therefore should be constantly inquisitive, that he may obtain a better knowledge of his art, from books, and men, and from his own observation and experience. Every intelligent farmer should keep a journal of his husbandry, a history of the season, an account of the sowing and gathering of the produce of his grounds, and especially of the result of any experiments in cultivation, which he may make; it would be attended with no difficulty; it would be a source of pleasure and satisfaction to him; and might sometimes lead to valuable improvements; and he owes it to the community often to communicate the result of such experiments. We should be ashamed of those prejudices, which hinder our inquiries, and of that illiberality, which is sometimes discovered towards those rich and patriotic gentlemen, who devote a great deal of their time and property to experiments in agriculture, unprofitable indeed to themselves, but of the greatest public benefit. Nothing is so fatal to the progress of improvement, as prejudice, and the ridiculous conceit that we are already as wise as we can be. There is no principle in agriculture that we should not be willing to bring to the test of experiment; and there can be little doubt that many principles, which we now deem firmly established, will be discovered to be mere prejudices upon further examination. I had an instance of this a few days since on the ground of an intelligent and judicious farmer in my neighbourhood.* It has become an axiom among farmers that an orchard will not flourish if planted where one has formerly stood; yet he

* B. Geddard, Esq. Brookline.

showed me an orchard of ten years growth, planted where the old trees were grubbed up, as flourishing as the rest of his cultivation; and that, if I should point you to his farm, you would say, was as much so as could be desired. But experiments are important not merely in correcting what is false, but in ascertaining what is practicable. We have yet much to learn as to the actual capacities of the earth to yield; and some recent experiments have demonstrated in this respect what, but for this evidence, would have been deemed incredible. A member of this society* has proved that more than one hundred and ten bushels of Indian corn may be obtained at a single crop from one acre of our ground; and an intelligent friend† has assured me that he has raised in his garden upon two square rods of ground twelve bushels of potatoes, which is at the rate of nine hundred and sixty bushels to the acre. The experiments on the subject of soiling of cattle of another distinguished cultivator,‡ to whom I refer always with singular respect and pleasure, as a man worthy of the days of Cincinnatus, seem likely to prove of the highest benefit to our husbandry, and to produce a new era in our agriculture; since this practice promises a certain means, within every man's power, of procuring a competent supply of one of the best kinds of manure.

Nothing indeed is more likely to increase the farmer's prosperity than inquiry and experiment, and a knowledge of the inquiries and experiments of others. We have already reaped and are likely still further to reap the greatest benefits from the excitement to agricultural inquiries and experiments, produced by the patriotic exertions of this society. The exhibitions of this day, and of preceding years, afford a strong testimony in their favour; and the various agricultural experiments to which their premiums have led, and the valuable information detailed in their reports, and the important and successful attempts, which have been induced by

* Hon. J. Hunnewell, Watertown. † Rev. James Flint, Salem.

‡ Hon. Josiah Quincy.

their patronage, to improve our stock of domestic animals by the introduction of the best breeds of foreign countries, have conferred incalculable benefit on the Commonwealth, and may be regarded by every citizen of Massachusetts, with pride and pleasure.

I have already, I fear, detained you too long ; but I promised to say something of the principal obstacles to a farmer's success ; and there is indeed one, which so greatly transcends every other, and which is such a prolific source of wretchedness, degradation, and ruin to many of our farmers, that I shall confine my remarks to that. I am satisfied, it is well understood that I mean the abuse of spirituous liquors.

I confess, fellow citizens, that I am appalled by the magnitude of this evil ; which is not indeed monopolised by the farmers, but extends to every class and threatens to overwhelm us with wretchedness and pauperism.* From the returns of the Marshals in 1810, it appeared that no less than 25,499,382 gallons of ardent spirits were distilled that year, of which were exported 133,483 gallons, leaving 25,365,899 gallons to be consumed at home. The same year about 3,000,000 gallons of rum and other distilled liquors were imported to this country, which, being added to the above, produced an amount of 33,365,899 gallons for our home consumption in a single year. Since that time it admits not a doubt that there has been a steady and rapid increase. This amount when divided among our population, excepting slaves, who are not allowed the use of ardent spirits, and children

* During the last year, a Report was presented to the legislature of New-Hampshire, respecting paupers. In this it was stated, that in 1800 the annual expenditure on that item amounted to 17,000 dollars. In 1819, although the population had not increased more than one fourth, yet the cost of the poor was 80,000 dollars ; "a ratio of increase, which will double the expenditures in less than five years." In consequence of this alarming discovery, "the Committee reported a bill, providing, that no person between the ages of seven years and seventy years, having common ability to labour, should be maintained at the public expense ; and that *no person, who shall be reduced to poverty by habitual drunkenness, shall be supported by any town.*"

under ten years of age, would give an allowance to each person on an average of more than seven gallons and a half a year. Now when we except the female part of the community, who use but little, and a large part of the community, who use none at all, the quantity consumed by those who do drink is enormous. In the town of Boston, and we can say as much in favour of the morals of Boston as of any city whatever, if I am not misinformed, there are more than eight hundred licensed retailers of ardent spirit, and many, who by some evasion escape the law and sell without license. If we estimate the number of shops and drinking houses upon a population of upwards of forty thousand, we shall find that it gives one retailer of spirits to every fifty inhabitants, and allowing every family to consist of seven persons it is nearly one to every seven families. If we suppose each of these shops to sell at the rate of seventy five dollars worth of ardent spirits by the year, which is not a dollar and a half a week, and then allow, as I think it is fair to allow, that an equal amount is drunken in the families, purchased in larger quantities, the direct tax upon this single town for this single article, valuing it at one dollar per gallon, is not less than one hundred and twenty thousand dollars per year. This, you will say, is monstrous; but suppose that our calculations are extravagant, reduce them one half; is not an expenditure of eighty thousand dollars a year for such an object upon such a population, monstrous! * Now making the usual allowances for the influx of travellers and strangers into a large town, and of many vagabonds and vicious people, who seek the concealment of a city, and the facilities, which

* This estimate must be quite within bounds. "By the most accurate computation, there are 1680 licenses for retailing ardent spirits, in actual force, in the city of New York; making an average of one tippling house to every fourteen houses in this metropolis. And by adopting the mode of calculation used by the managers of the Society, for the prevention of Pauperism for the year 1819, to ascertain the sum annually expended in New York, in the consumption of spirituous liquors, we arrive at the frightful result, that, in 1820 the sum of \$1,823,011, was squandered in the use of this single article!"

it affords for depredation, and the quantity of ardent spirits consumed there, is not disproportioned to what is consumed in the towns in the country. But the actual cost of the liquor is by no means the whole nor the worst part of the expenditure. It has been ascertained by careful inquiry, that nearly four fifths of the tenants of our alms-houses and of paupers, who are supported by the town or state, have been reduced to beggary by their own intemperance or the intemperance of those on whom they depended.* The same remark applies to the convicts in our prisons. Its effects upon the agricultural part of the community are as disastrous as can well be imagined. I have known in one immediate neighbourhood seven estates of persons once of respectable standing in society, and most of them with families, mortgaged and lost, and their families reduced to beggary, solely by the intemperance of the fathers and husbands; and in a neighbouring state, I have witnessed with unmingled pain an extensive county, which twenty years ago was flourishing, now impoverished and desolated by the scourge of intemperance. But instances without number of the ruin and misery, which this vice brings with it, occur to every man, who will open his eyes. Where you see one of these grog shops established, one of these gates of perdition set open, there you see the work of ruin begun, and idleness

* The Report made to the Legislature of Massachusetts, the last winter session, consisting of Reports from several towns in the Commonwealth, states that in one of the towns it was found that thirteen-fourteenths of the poor, whose maintenance was a burden on the corporation, were brought to the alms-house, "either directly or indirectly, by intemperance." Another statement says "Intemperance is the most fruitful source of pauperism. More than half the adult persons who have been admitted to our work-house, for sixteen years, have been addicted to the excessive use of ardent spirits."

It is a fact, stated on the proper official authority, that, during the last year, of 87 patients admitted into the Hospital for the Insane at New York, "the insanity of 27 was caused by the intemperate use of ardent spirits."

In an Address delivered the last year at Roxbury, it is remarked "The bills of mortality declare, that the annual average of deaths in Massachusetts from intoxication alone, is 666."

and profligacy, and quarrels, and debt, and mortgage, and imprisonment, and poverty, following with inevitable certainty.* In a word the use of ardent spirits is to the community a source of more wretchedness, poverty and crimes, than all other causes combined. The farmer is not less in danger than any other person. Much habitual drunkenness has been produced, and many a farmer completely ruined, by allowing to himself and his hired labourers the use of ardent spirits.

I take upon me to say, on the highest medical authority, that none is necessary to the strength and vigour of the human constitution. Men, who drink no spirit whatever, can in fact perform more labour and suffer far less from exposure to the extremes of heat and cold, than those persons, who depend on the temporary stimulus of ardent spirits. They are not so liable to droop under the heat, nor to perish with the cold, as many facts have proved. The time has come when it may be laid down as a settled principle, a principle, which is in the last degree essential to our agricultural as well as moral prosperity, that no spirituous liquor is necessary to the labour of a farm; and none ought ever to be used on a farm.†

* Dr. Nichols in an address recently delivered at Danvers, gives the following valuable calculation. "There are but few labourers among us, who pay less than 50 cents a week, which amounts to a fraction over seven cents a day, for ardent spirits, &c. Instead of spending this for that which is not bread, place it in the SAVINGS BANK. At 5 per cent. compound interest, (the rate allowed,) it will amount in 5 years to 146 dollars 48 cents; in 10 years to \$333,94; in 15 years to \$573,93; in 20 years to \$831,12; in 30 years to \$1761,30. How much," he exclaims, "would this sum improve the condition of many among us, at the age of 50 years.

† It has long been imagined that the labouring classes could not sustain themselves under the weight of their daily employments, and especially in foundries and large manufacturing establishments, where they are much exposed to heat, and breathe a confined atmosphere, without the regular use of ardent spirits. The results of an important experiment made, during the last season, by Mr. James P. Allaine, of the City of New York, establish the fallacy of this opinion.

"Mr. Allaine is the proprietor, of a large foundry at Corlaer's Hook. During the last season he employed upwards of sixty workmen, more than thirty of

The practice of some of our farmers in this matter deserves to be mentioned with the warmest commendation ; and as likely to aid in a high degree the interests of humanity as well as of agriculture. I know several cases, in which farming is conducted with perfect success, to the mutual satisfaction of the labourer and his employer, without any spirituous liquor being allowed, and none used, excepting in the season of haying, and then in the most moderate quantities, because it is at the expense of the labourers themselves. One of these is a case, in which the farmer has at least seven hundred, and another nearly two thousand, days' labour done in the course of the year ; and one of the instances, to which I refer is not the experiment of one year only, but of more than twelve years in succession. Every farmer, who has a proper regard for his duty and interest, and the best interests of his fellowmen, should come to the determination on no consideration whatever, and in no form whatever, to

whom were men of families. In the course of the summer, he was informed that many of them were in debt ; and on investigating their concerns, with surprise he ascertained the fact, that every one who was in the habit of using ardent spirits was involved to an extent beyond his ability to pay ; and, with a satisfaction equal to his former surprise, he learned the additional fact, that those who made no use of spirits were in easy circumstances, and their children well provided for at school. Nor did a difference of wages, from seventy-five cents to one dollar and twenty-five cents per day, make any perceptible change in the situation of the former class of workmen.

“ With this picture before him, Mr. Allaine was at once induced to prohibit the use of ardent spirits altogether in his shops, during working hours. But one person left his employ in consequence of this restriction ; and this man had borrowed of Mr. Allaine, while in his service, upwards of 300 dollars to pay grocery-bills. In conclusion of his letter Mr. Allaine observes : ‘ I have great reason to be pleased with the happy effects of this regulation. I find my interest better served, and that those, who, from excessive drinking, had become of but little worth to me, and, in many instances, of less to their families, have now become able and steady ; earn more money ; and their families, as well as themselves, have expressed in a language not to be misunderstood, the many comforts, and the domestic happiness, which they enjoy in consequence.’ ” For several of the above notes I am indebted to the Annual Report of the Massachusetts Society for suppressing Intemperance, which is just published, with the Anniversary Discourse, by the Rev. Mr. Jenks.

admit within his territories this greatest and most subtle enemy to his peace and prosperity, and to the peace and prosperity of the Commonwealth.

It will not be deemed foreign from the occasion, if I call upon every good man, who hears me, to lend his aid in the suppression of this unnecessary and detestable vice; in the removal of this greatest disgrace of our virtuous community; and in withstanding the progress of this tremendous moral desolation. How deeply would the sympathies of the whole country be roused, if it was declared, that in some one of our most public places, and in broad day light, one of our fellow citizens, blest perhaps with property and education, and having those around him, who look with trembling agony for their subsistence and comfort and honour to his exertions and character, was about to commit deliberately an act of self destruction; and not merely to be allowed, but encouraged and assisted, to do it. How would every generous heart melt at the recital and kindle with indignation at the savageness of those, who could assist at the sacrifice! Yet, fellow citizens, this is no picture of the imagination: and in a state of society as enlightened, as virtuous, and as much blest as any ever was, these sacrifices under circumstances of tenfold exaggeration, are every day permitted; and accomplished by means though of gradual, yet of certain progress, and as degrading and brutal as can be imagined. I would not do any man a wrong, but for my part, I cannot but regard the retailing of spirituous liquors, excepting in public licensed taverns, and then only to travellers, the retailing of spirituous liquors to the inhabitants of the same town or neighbourhood to be drunken on the spot, as an employment among the most immoral of any that are tolerated by the customs of the community; and I consider the man, who knowingly and voluntarily contributes to seduce his neighbour, and to encourage his habits of intoxication, as in fact, if I were giving my verdict on oath I should say so, as criminal as the common murderer and

robber. Far better would it be in most cases for the wretched victim at once to take his life and his property than to entrap him by guile; and to subject his poor wife and children to the bitterest agony, and to their feelings the deepest disgrace.

In the name of all that is dear to religion and humanity, of all that is valuable to us as men, as citizens, and as christians, I call upon those, who have influence in the community, upon those to whom the making of the laws, and those, to whom the execution of wholesome laws is intrusted, upon the guardians of the Commonwealth, to inquire what they can do, and to do every thing that can be done, to arrest the progress and to close the source of this terrible evil. It is only the pretence of indolence and inhumanity that nothing can be done. Let every good man in the community utterly withdraw his patronage and custom from places, where such practices prevail. Let the selectmen of our towns execute their duty and the courts of Sessions restrain the emission of licenses. Let the grandjurors present, as they are bound in oath, every violation of the laws, that comes within their cognizance. Let the legislators make it highly penal to sell liquors in any small quantity. Let all debts, contracted for spirituous liquor be made irrecoverable by any process of law, and the oath of the defendant, as in case of usury, be deemed a sufficient evidence of the fact. Let the price of a license be such as to render it profitable but for few persons to obtain it; and so that they may be compelled to contribute in a just proportion to the support of those, who by their intemperance have become a charge upon the town. The superior discretion and wisdom of those, to whom are committed the highest interests of the community, will suggest many other and better means of removing this evil and preventing its further progress. Never was there a subject more deserving of the consideration, and solicitude, and persevering exertions of the patriot and the christian.

Forgive me, fellow citizens, that I have strayed thus far from the proper duties of the occasion. We celebrate the Farmer's Holiday. It is an occasion on which we may contemplate with honest pride, and with exalted satisfaction, the happy condition of our Commonwealth. Agriculture, the first and noblest of all arts, and one of the most honest and honourable of employments, the great source of national power and prosperity, begins to excite among us an interest, proportionate to its importance; and to receive that patronage, which augurs well for its future prospects—Blest with a government, which secures to every man the rights of property, and the full enjoyment of the produce of his labour; with a soil and climate, with which we have no reason to be dissatisfied; for if they have not the mildness and the luxuriant fertility of other regions, they are exempt from many evils to which others are subjected; enjoying throughout the community the blessings of education, religion, and civil liberty; and with a yeomanry as enlightened, as moral, and as enterprising, as can any where be found, we may anticipate the most important and delightful results. In view of our fruits and our fields, our villages and our domestic retreats, we may exclaim with the Roman Poet, "Happy farmers, if they knew the blessings, which they possess."*

REPORT OF THE COMMITTEE ON MANUFACTURES.

The Committee on Domestic Manufactures award as follows:

To William Sheppard, of Watertown, for the best specimen of Broadcloth, the first premium, \$ 30

To the Wolcott Woollen Manufacturing Company for Broadcloth, the 2d premium, 20

* O fortunatos nimium, sua si bona nouint, Agricolas.—GEORG. LIB. II. l. 453.

To Stephen Buttrick, of Framingham, for Woollen Cloth of Household manufacture, the 1st premium, \$ 12

To Jonas Pollard, of Bolton, for ditto, the 2d premium, 8

To the Wolcott Woollen Manufacturing Company for Cassimeres, the 1st premium, 15

To Edward Howard, of Dudley, for ditto, the 2d premium, 10

To the Wolcott Woollen Manufacturing Company for Satinets, the 1st premium, 10

To Isaac Curtis, jr. & Co. of Stockbridge, for do. the 2d premium, 6

To Nathan Barrett, of Concord, for the best specimen of Carpeting, the 1st premium, 15

To Betsy Delano, of New Braintree, for the 2d best, the 2d premium, 7

To the same for Linen Diaper, the 1st premium, 10

To Joseph Richardson, of Hingham, for ditto, the 2d premium, 5

To Thomas Hart, of Dorchester, for Cotton Shirtings, the 1st premium, 20

To William Phillips and Co. of Dedham, for Worsted Hose, the 1st premium, 5

To Lemuel Healey, of Dudley, for Sewing Silk, the 1st premium, 5

To Caroline Bronsdon, of Milton, for ditto, the 2d premium, 3

A piece of Stair Carpeting, manufactured by Miss Anna Edes, of Charlestown, was of sufficient good quality to be entitled to a premium, and would have obtained one had there been the number of yards required by the Trustees.

A premium was withheld for the same cause from Mrs. Oliver Fiske, of Worcester, who presented a piece of Flannel. In point of firmness, softness and strength, it was thought entitled to favourable notice. The committee exceedingly regretted in another case, that of Mr. James

Howarth, of Andover, that they were precluded by the unseasonable entry of his Flannels, from giving them the advantage of a premium. The specimen was thought very good, and perhaps there is no article of domestic manufacture more deserving of liberal encouragement.

The Satinets of Daniel Ellis & Son of Walpole; the Shirtings of the Thread Manufacturing Company of Seconk; and the Gauzes of Archibald Kennedy, of Seconk, although they were entered too late for examination by the committee, were inspected by the great number of persons who visited the hall on the second day of the exhibition, and whatever be the merit of these fabrics, they have obtained their fair reputation with the public, which will in a measure allay the disappointment of the manufacturers, who lost their opportunity of obtaining premiums.

The Trustees have offered the following gratuities :

To Elisha Hammond, of Brookfield, for a specimen of Rose Blankets, better than any exhibited at Brighton in former years, \$ 5

To Julia A. Drury, of Marblehead, for a Hearth Rug, quite equal in quality to the best imported, 5

To Mary F. Baldwin, of Chelmsford, for a Hearth Rug, of prime quality, and a Lace Veil, 5

To Abigail Little of New Braintree, for a Hearth Rug, 3

To Elizabeth Denny, of Worcester, for ditto, 3

To Rebecca Warren of Chelmsford, for ditto, 3

To Mrs. Lewis of Dorchester, for a Silk Sash, 2

To Priscilla W. Drew, of Plymouth, for a Linen Lace Cap, 2

To Betsy Merrill, of Salisbury, for Linen Thread of a very fine quality, 5

To Elizabeth O. Spear, of Dorchester, for a Cotton Counterpane, 5

To Hannah Hoar, of Lincoln, for ditto. 4

To Phoebe Whitmore, of South Boston, for ditto, 3

To Mary Brown, of Hingham, for an imitation Leg-
horn Bonnet, 5

To Lydia and Hannah Marshall for ditto, 5

[These specimens were, in neither case, fine; but every example of this manufacture is deserving of reward, because it is of recent origin here. The material is a native grass; the fabric is more durable than that of straw, and may be expected soon to rival the best specimens of a very expensive imported article.]

To Ebenezer Blake, of Wrentham, for Straw Bon-
nets [of a finer quality than any exhibited at either of
the former shows,] 5

To Benjamin Wheeler & Co. of Framingham for
specimens of Straw Bonnets, very beautiful, 4

To Ann Dalrymple, for a fine Straw Bonnet, 3

To Mr. Cephas Leach, of Easton, for Straw Bon-
nets, 3

[Mr. Leach would have received a larger gratuity, had his specimens been presented on the day appointed for the examination.]

To Misses Sarah, Polly and Elizabeth Lewis, for a
variety of Fancy articles manufactured from the Down
of the Turkey—to each, 2

To Miss Odiorne, of Boston, for a Gown made from
Cotton and the ravellings of an old silk gown, 4

[This article, together with several specimens of Thread, made by two females whose names do not appear, from shreds of silks and gauze taken from the sweepings of a milliner's shop, may be classed among the savings of a minute economy, not to be mentioned but with respect. Examples of this sort serve to suggest new resources to the necessitous, and add to the stock of useful employments for female children in humble life.]

To Jane Swan, of Methuen, for fine Linen Thread, 3

To Hannah Sparhawk, for Worsted Hose, 2

To Mrs. Hawkes, of Lancaster, for ditto, 2

To Mary Ann H. and Margaret P. K. Rider, for needle work, each 2

To Mr. John Johnson, of Marblehead, for a Caplin Seine and a Herring Net, manufactured from Cotton, 10

[This is a new article ; the public is indebted, as far as the committee can learn, to Mr. Johnson, for introducing the use of Cotton for this purpose. The fishermen of Marblehead, it is said, prefer Mr. Johnson's nets to those made from Hemp ; whether of foreign or domestic manufacture.]

The water-proof Hats, of a superfine quality, exhibited by the Watertown Hat Manufacturing Company, appear to unite the qualities of great firmness and lightness. They were finished in the best style, and judging from these specimens, their manufacture has attained to great perfection.

A gratuity of *twenty dollars* was tendered to this Company at the last annual exhibition. A similar mark of approbation is certainly as well merited, to say the least, the present year.

The Trustees have sanctioned a gratuity of *ten dollars* to Col. Johnson Mason, of Medfield, for a specimen of *Duck* made with a machine, the invention of Dr. Jesse Fox of Saugus, and which has received some improvements by Mr. Mason. The sum given to Mr. Mason bears no proportion to a just estimate of the importance of the manufacture, or to the merit of the specimen. The thread is very even and no defect could be detached in the fabric, although critically examined by several navigators. It was thought by these gentlemen to bear a comparison with the best quality of duck of foreign manufacture.

The broadcloths exhibited the present year were not of the class of extra fine. They were the best of that description of cloths which can be afforded in our market cheaper than the imported. The cloths of domestic manufacture worth from two dollars fifty to six dollars the yard, have taken the place of imported cloths of

the same kind, and have put a stop, almost wholly to the importation. The importation has been progressively diminishing for some years. Those of the committee more particularly conversant with the subject, and whose experience may justify the expression of an opinion, entertain no doubt that the manufacture of *middling* and *fine* cloth may be considered not less firmly established among us than that of cottons, and that under equal advantages of capital and good management, it will not be less profitable. It is creditable to our Woollen Manufacturers, that the *finishing* is now in no degree inferior to that of the English. The fixing of the blue dye, one of the greatest difficulties in the art, is now well understood. The blue is made as permanent as any other colour. There is the same variety in the shades as in the English cloths, and there is no want of brilliancy.

The progress of household manufactures in all their endless variety, is less apparent than that of the fabrics made by incorporated companies, because the former are carried on in retirement, are brought into the market in small parcels, without pretension. Their origin is unknown to the public, and they are often admired and purchased (particularly fancy articles) as the products of the ingenuity and taste of foreign countries. So far as respects articles of the first necessity, the domestic manufacture is growing so rapidly as, every year, to diminish the importation of many kinds, and to stop altogether the importation of a *few*. Excessive bounties from government for the purpose of encouraging domestic manufactures must, it is obvious, have a contrary tendency, since by increasing the profits of a business already lucrative, which would be the effect of this policy, too much capital would be diverted into every successful branch of manufacture, thus artificially raised into public notice, and ruin would be brought upon those very establishments, which are now enjoying an amount of profits.

certainly well earned, but sufficiently ample for the desires of reasonable men, and certainly so for the public.

RICHARD SULLIVAN,
ABBOTT LAWRENCE.
JOHN LEMIST.

Brighton, Oct. 11th, 1821.

REPORT OF THE COMMITTEE ON HORNED CATTLE.

THE committee appointed to award the premiums offered for every species of Horned Cattle, report, That the wise provisions of the Trustees in dividing the duties of the committee on live stock was this year wholly defeated, as to *that branch*, which comprises horned cattle, owing to the great and unexpected increase in the number of competitors. From eighty different entries of live stock, which was the number last year, it this year suddenly rose to more than one hundred. Perhaps there is no surer test of the increasing interest felt in the subject of agriculture generally, and in the improvement of domestic animals more particularly, than the increase of the number of different objects entered for premium since the first cattle show in 1817, which has been from thirty-seven to more than one hundred, and this at the time and during a period in which three very respectable county societies have sprung up, full grown, in our immediate vicinity. It must be observed that when we speak of the number of *entries*, we do not confound it with the number of *animals*, which we are persuaded exceeded three hundred, and we should not be surprised, if they amounted to five hundred. This increase, while it must be gratifying to the friends of agriculture, (or which is tantamount) the friends of their country, like many other *good* things has its attendant *evils*. It renders the duties of those appointed to decide not only more laborious, but more

painful and invidious. The *labour may indeed, and must* in future years be diminished by a division, unless men shall be expected to sacrifice their health to the object—but the other evil cannot by any possible measure be remedied. The duty must be *forever painful and invidious*. Thus, for example, though you may have as many committees, as there are different descriptions of animals offered for premium, and it is obvious you cannot extend the division of labour beyond that point, still so long as you shall have as the committee had this year *thirteen* milch cows all of excellent quality to examine, and while they can only award *three* premiums—and so long as there shall be offered twenty-three heifers, out of which you are to select but two, the duty must be painful and invidious. For it is not to be disguised, that it is not the disappointment of not receiving a prize of twenty or forty dollars, which is the principal source of vexation, but it is the mortification of defeat, the humiliation of having formed extravagant notions of one's own animal; expectations encouraged by all one's neighbours who comparing our bull, or bull calf, or cow, or heifer with all those in the *little world around us*, have decided the question before hand, that *we must* gain, not *the money*, (for that is too contemptible,) but the honour of *the victory*. But the *field of Brighton* soon dissipates these *local* illusions. *There* they see the pride of a *hundred villages assembled*, and we have no doubt, that if self love and mortified hopes did not prevent the exercise of sound discretion, the candidates themselves would, in most cases, generously award the prizes to their more fortunate competitors. These remarks are made with a view of presenting not merely to *competitors*, but to the *public*, the serious difficulties of such a mode of trial. Errors may be—nay, *must* be committed by any judges however intelligent. The only thing in favour of their judgment is, that it is disinterested and well weighed; and after all, they *do* obtain something like the expres-

sion of public opinion, *without consulting it*, because they have an opportunity of seeing the throng of spectators around the favourite animals—they do in spite of themselves hear the verdict of the public, and though they endeavour not to be influenced by it, yet it would be absurd to suppose that these marks of public preference had no effect upon them.

This committee having under their cognizance the articles for which the show at Brighton was *originally principally* designed, may be indulged in making some general remarks on the tendency, and effect of their exhibitions.

It is not more than forty years, since the idea was entertained in Great Britain, that a spirit and energy could be given to agricultural efforts, by associations, public exhibitions, and premiums judiciously awarded. The effects produced in that country, more especially in the improvement of their stock have far exceeded the most sanguine hopes of the first promoters of this system. We have little and indeed no doubt, that the horned cattle and sheep of Great Britain were fifty years since, not superior to ours. We believe that the races of domestic animals imported from any part of Europe, not only do not deteriorate but that they improve in all the Northern parts of the United States. We believe that we have native animals of all descriptions, with the exception perhaps of the crosses of hogs with the Chinese breed, (which we have however recently imported,) equal to any Great Britain possessed forty years since, when Bakewell, Coke, Princeps, and an hundred other farmers, or opulent land holders in that kingdom, set about the patriotic work of improving their native breeds. They did not commence it by *importations*—they confined themselves simply to *selection*, and the effects were such as that in a few years. bulls, which of the best description at a former period might have brought one hundred dollars, sold for four

thousand five hundred dollars. This was no speculation of a visionary character, like the rage which prevailed with us for a short time in relation to Merino Sheep. It sustained itself, and exists to the present hour, so that a bull calf of certain breeds considered perfect, will bring from two hundred to four hundred dollars.

If we were asked the general character of our best shows of cattle compared to those at Smithfield on their anniversary show, or at Lewes, or many other places in England, we should say that it will require at least ten, or perhaps twenty years, for us to equal them. Yet it is our firm conviction, that if we had never imported a single foreign animal, but had excited a strong zeal in our own country to select and propagate the best animals of native production, we should in the course of twenty or thirty years have been able to send animals to Great Britain and contend against their best raisers of stock for the first prizes. Nay more, we believe *now*, that if we could transport the *best working* Cattle of Worcester and Norfolk, (the latter however being all purchased from back counties) to Great Britain, they might challenge *all the three kingdoms* to compete with them in all the various points of labour to which cattle are applicable. These working cattle are, *we know*, as much superior to theirs, as our stock is inferior to theirs in the articles of bulls, cows, sheep and hogs. The fact, that we are so superior to them in this point, of which we have no question, proves, that we have among us an admirable but neglected race of animals, and the reason is obvious. Is a *calf* remarkably *fat*? Does he weigh one hundred and fifty pounds at the end of six weeks, and that accompanied by an excellent form and proportions? His fate is decided. He must feel the sharp knife of the butcher—he must prematurely pay the forfeit of his uncommon and excellent qualities, and load the table of our *epicures*, who would have made a better dinner on a smaller and less valuable animal.

It may be reasonably asked then, why have you encouraged the importation of *foreign stock*? Why have you paid such liberal prices to those who have imported them? Our answer is very brief—and we hope satisfactory. It was done *principally* with the view of shewing our farmers, what *had* been done in *other* countries in a short time by careful selection and cultivation. No man who ever saw Denton, Mr. Williams's bull—Fill Pail, Mr. Thorndike's, presented by him to the Agricultural Society—Cœlebs, sent to our country by Mr. Coolidge—or Holderness, imported by Mr. Parsons, could entertain a doubt, that they were superior to any animals of the same description which we had ever seen. It was a short and conclusive mode of producing conviction;—though equal care might in a few years have produced an equally improved native stock, yet the process would have been slow, and every lost year is of great importance.

That these animals did produce a great impression upon our farmers, it is now needless to state. The simple fact, that farmers, always too cautious of adventuring their money, were ready to send their cows at five dollars, and even ten dollars, to these imported animals, instead of fifty cents for the use of our native bulls, is conclusive.

But what is still more conclusive, because the facts we have now mentioned *might* have been the effect of fashion, or of speculation, is, that when the *progeny* of these animals appeared at our shows, they attracted every eye, and commanded on an average *four times* the price of our native breed.

The effect has been so great as to cause the disappearance of our native breed of *young* animals at our shows, with a few exceptions.

It ought however to be remarked that our cows offered for premium, are still almost entirely of domestic growth, and of most estimable qualities; so that we seem to possess all the advantages we could desire of availing ourselves of

the perfection of the British stock connected with females of excellent properties of our native breed.

We shall now proceed to announce the premiums.

FOR NATIVE BULLS.

The committee award the first premium of forty dollars, to a bull raised by Mr. Samuel Brooks, of Brighton, sired by 'Holderness' the imported bull of Gorham Parsons, Esq. of Brighton.

The second premium to Stephen Patch of Lincoln, twenty dollars, for a native bull. This bull was the progeny of one raised by Payson Williams, who gained the first premium two years since, and is an encouragement to the preservation of our best native stock.

There was several other bulls which attracted the attention, and held in suspense the opinions of the committee.

The most remarkable of these were a bulls of the Hon. Mr. Welles, from 'Denton,' the celebrated imported bull of Mr. Williams, of Northborough.

The bull of Mr. Prince, from 'Holderness,' from Mr. Prince's Alderney cow, imported and sold to Mr. Prince, by Capt. Tracy of the London Packet.

A bull of Joshua Coolidge, of Watertown, from the celebrated Cœlebs.

Several native bulls of considerable merit, were also exhibited.

BULL CALVES.

The first premium for the best bull calf, was awarded to Charles Clark, of Framingham, one quarter Fill pail, and three quarters native stock, fifteen dollars.

This case is worthy of notice. The animals produced by Fill Pail (Col. Thorndike's bull) have always discovered a strong resemblance to the parent. His qualities are excellent, but every farmer knows that you are not certain in crossing the breeds of retaining in the first cross the character of the original stock. Perhaps in the second or third

generation you will attain the greatest degree of perfection, though you may fail of it in the first cross. The decided superiority of this bull calf is highly in favour of the progeny of Fill Pail, and should induce our farmers not lightly to give them up. There were many other fine animals from Fill Pail, such as Mr. Parsons's two heifers, offered for exhibition, and others which will be noticed hereafter.

The second premium for bull calves was awarded to Francis Amory, Esq. of Milton, eight dollars.

This calf was out of Cœlebs, and long held the committee in doubt as to his being entitled to the first or second prize.

A third extra prize, not originally offered or advertised, for a Bull Calf, was awarded to Samuel Cutter of Cambridge, five dollars.

This Calf was out of 'Holderness' and was in fine, perhaps *too fine* condition to be judged of fairly.

It is indeed important, that farmers should know that their animals rather suffer than gain in our estimation and award, from being overfed and presented to us, unnaturally fat.

There was an admirable bull calf offered by Mr. Uriah Manning of Woburn, of the Cœlebs race, who would have taken a premium, but he was offered too late. He sold at six months old at our auction for sixty-three dollars.

There was a beautiful bull calf exhibited by Joseph Goddard, Esq. of Brooklyne, of our native breed, who would three years since have obtained one of our two premiums, and we hope this race may not be neglected, but he did not appear to the committee quite equal to those to whom the premiums were awarded.

There were also two beautiful bull calves exhibited by Dr. Chaplin and Major Wheeler of Framingham.

MILCH COWS.

The premium for the best Milch Cow, 40 dollars was awarded to John Stone of Marblehead, for his Cow raised in Lynn.

His application was accompanied by written documents and satisfactory proofs, that this Cow had produced from the 1st of June, to near the day of the Show, from 12 to 9 pounds of butter per week ; averaging 11 pounds through the whole time. It was the only case duly authenticated, and surpassed even the verbal statements, often loose, of the other claimants. The next year the Trustees will probably require affidavits on this subject from all claimants—because the properties of a Milch Cow can be but imperfectly known by inspection.

The second premium was awarded to John Prince, Esq. for a native Cow—30 dollars.

The third premium for a Milch Cow, to Gen. S. G. Derby, of Weston—20 dollars. This Cow was of the Alderney breed, imported by Benjamin Lee, Esq. of Cambridge.

It will be seen that we give high premiums to our excellent Cows, because we believe they are the most important articles in the improvement of our stock. There was an admirable Alderney Cow exhibited by John Hubbard, Esq. of Boston, imported by him, whose progeny, a fine Bull Calf, was generously given to the Society, for which he has received its thanks, and will receive those of every friend to Agriculture.

There were ten other distinguished Cows offered for premium. Those which the committee deemed worthy of particular notice among so many excellent ones were—a Cow of the Hon. Mr. Welles of Dorchester—a young Cow of Dr. Foster's, progeny of the Cow which obtained a premium three years since, and an admirable animal—an excellent Cow of Major Wheeler's, of Framingham, which would have been classed with those entitled to premium, if he had not with great frankness very honorably expressed his doubts, whether she was raised *within the state*, which is one of our indispensable conditions. This example of Major Wheeler deserves our thanks. There ought never to be an attempt to evade our rules.

Mr. Luke Fisk of Waltham, a well known and successful candidate for our premiums, and highly deserving our notice as an intelligent cultivator, offered an excellent Cow, but he had owned her for so short a period as not to permit us to award any premium.

There were several other excellent Cows, particularly those of Mr. Brigham. Mr. Sparhawk and Mr. Hunting, but the weigh of evidence decided the committee in favor of those selected.

FAT OXEN.

As to Fat Oxen, the Show was comparatively meagre. We do not at all refer to the inferiority of the animals offered, though we have undoubtedly had better in some years. From *fourteen* in number we have fallen to *four*. Whether this is to be attributed to the season, or the market, or both, we cannot determine. We have in deciding these premiums followed one fully and deliberately settled rule, to give the premium to the best animal on the whole, without regard to weight.

We therefore award the first premium for fat oxen, to J. Hubbard of Hatfield, 50 dollars—weighing alive 2308 pounds.

The second, to Stephen Howe of Petersham, 40 dollars, weight of his ox, 2460 pounds.

The third, to Asa Rice, jun. of Shrewsbury, 30 dollars. For an admirable and extraordinary 4 year old steer, weighing 2068 pounds.

HEIFERS.

The first premium for heifers, among 23 animals of this class, was awarded to Moses Coolidge of Watertown, premium 15 dollars—The heifer was of the Cœlebs breed.

The second, to Dr. James Prescott Chaplin of Cambridge, premium 10 dollars—we believe of the Fill Pail breed.

The heifers most distinguished not admitted to premium, were Mr. Abner Wheeler's two heifers of native breed of excellent forms and qualities—Mr. Parsons's offered for exhibition only—Major Jaques's 2 heifers of the Cœlebs breed—Hon. Mr. Welles's of his well known excellent stock.

The Society moreover granted as a gratuity to John Badger, of Natick, ten dollars for an exhibition of three very tolerable heifers, produced at a birth, though not of themselves in other respects entitled to premium. They are now near two years old, almost exactly alike, and his desire to gratify public curiosity merited some remuneration.

In conclusion, the Chairman of this committee must express his regret, that he was not able to present at the meeting at Brighton, a written report, in which he could have done justice to all the competitors, and that in a hurried and confused statement from memory, fatigued and exhausted as he was, and unaccustomed for many years to public speaking, he may not have done justice either to the Trustees or the Competitors.

JOHN LOWELL, Chairman.

REPORT OF THE COMMITTEE ON THE PLOUGHING
MATCH.

The Committee upon the Ploughing Match, consisting of E. Hersey Derby, Chairman, Isaac Davenport, Silas Gates and Paul Upton, Esq. ask leave to Report:—

That a piece of green sward land was divided into lots of a quarter of an acre each, that there were several competitors, viz.—Silas Dudley, one pair of cattle, himself, both ploughman and driver—time employed 43 minutes. Lewis Lilly, one pair of cattle, himself, ploughman and driver—53½ minutes, Joseph Curtis, two pair of cattle, with Nelson Marvel, ploughman, and — Moulton, driver—55 minutes. Samuel Ward, one pair of cattle, Clark Jenney, ploughman, and Elias Sawyer, driver—57 minutes. Aaron D. Williams, two pair of cattle, David Morrison, ploughman, and Abijah Seaver, driver—64 minutes. Jonas L. Sibley, one pair of cattle, Samuel Sibley, ploughman, Jerry L. Batchellor, driver—44½ minutes. And Darius Putnam, one pair of cattle, himself ploughman, and driver—39 minutes. Places

being assigned by lot. That the work in general was very excellent, and that they have found great difficulty in awarding the premiums. They consider the ploughing of Messrs. Curtis and Williams as rather the best, but being bound by their rules and regulations to consider not only the excellence of the work, but the economy of labor as well as the time employed, and considering that both Messrs. Curtis and Williams, each had two yoke of oxen and a driver, and Mr. Dudley had only one yoke of oxen and no driver; and also considering the excellence of his cattle, and his peculiar skill of managing them, together with the goodness of his work they have been induced to award;

To Mr. Silas Dudley, of Sutton, the first premium, 20 dollars as owner of the plough; 10 dollars as ploughman, 5 dollars as driver.

To Mr. Curtis of Roxbury, second premium, 12 dollars, as owner of the plough.

To Nelson Marvel, 6 dollars as ploughman.

To — Moulton, 3 dollars as driver.

To Mr. Aaron D. Williams, 3d, 3 dollars as owner of the plough.

To David Morrison, 4 dollars as ploughman.

To Abijah Seaver, 2 dollars as driver.

They had great pleasure in observing that all the teams were very fine and under excellent management.

E. HERSEY DERBY, *Chairman.*

Brighton, Oct. 11, 1821.

REPORT.

The Committee on Working Oxen, consisting of Messrs. John Welles, Samuel G. Derby, and Elijah Perry, report:—

That they have been much gratified to find that the encouragement given by the Society has had so beneficial an effect.

The Show of Working Cattle this year was certainly superior to any that have preceded it. Eleven yoke of Work-

ing Cattle were entered to contest for the premiums, and, if the advantages of competition and excitement needed illustration, it would receive additional force from this part of the exhibition.

The cattle were in general well made and well matched, of great power and docility, and their training superior to what has been before presented to the view of the Society. Still, in backing, which is a most useful and necessary power in the ox team, there is more attention needed in our farmers. Several owners of oxen went from the exhibition, satisfied that their cattle were not so well trained in this particular as to deserve the premium. It is a source of much gratification to the Committee, that they can feel so strong an assurance, from the appearance of the young stock, exhibited this year, that the zeal and enterprise of our countrymen is likely, for succeeding years, to present a breed of cattle more deserving of encouragement and more promotive of the best interests of the country.

After an impartial examination of the working oxen, and such test of their power and training as could be had, the Committee awarded as follows :

To Darius Putnam, of Sutton, 1st premium.

* To Silas Dudley, of Sutton, 2d do.

To David Smith, Jr. of Waltham, the 3d premium.

To John Atkins, of Natick, half the 4th do. \$7 50.

To Jonas L. Sibley, of Sutton, the other half 4th do. \$7 50.

To Jonathan Davis, of Oxford, the 5th do. \$10.

The fourth premium was divided from the general circumstances of equality in the minds of the Committee. The 5th premium was richly merited by Mr. Davis, for his Steers,

* The second premium which was awarded to Silas Dudley, and would under other other circumstances have been well deserved, could not consistently with the rules of the Society be paid, as the same cattle had received a premium of the Society at an exhibition in a preceding year. This fact was unknown at the time. This regulation is important in the view of the Trustees in producing a more extensive and beneficial competition. It has been announced in their advertisement of premiums, and as they thought was fully understood by the public.

only 3 years old, which discovered no want of power in the usual movements of a load and waggon weighing nearly fifty hundred.

The Committee on 'Working Oxen' have a full conviction of the motives which govern the Trustees of the Agricultural Society, in the premiums which are offered for the several grades of Working Oxen.

The utility of the Ox-team, its adaptation to the nature and condition of our soil, and its cheapness of support, said to be at less than half that of a Horse-team, would induce a belief that it must be in use in New England altogether. There are however other and very important considerations. A judicious farmer may make his team every year of increased value by their growth and training; and in case of most of the accidents that can befall them, the carcase is of nearly full value. It is not so with the Horse-team. And when it is considered that, from the use and multiplication of oxen one of the greatest staple articles of our country is enlarged, the motive becomes imperative, and the interest of the Society involves that of the state.

It may be said that these facts are known to our intelligent farmers; but it is a source of regret that a great increase of horses in double teams has taken place, which must lessen the means of support to our increasing population, and thus become a public evil.

But your Committee consider that the principal, if not the only objection to the Ox-team, its want of speed, may be nearly corrected in the training, and they are happy to see in the cattle exhibited this year, much to encourage the expectation. The motives for the use of ox power are so persuasive and well founded, embracing so deeply both individual and public interests, that your Committee cannot but trust they will find a due estimation and support in the discernment, vigilance and patriotism of the Farmers of New England.

Per order of the Committee,

JOHN WELLES, *Chairman.*

REPORT.

THE Committee of the Massachusetts Society for the Promotion of Agriculture, appointed to decide on the Premiums for Sheep and Swine, offered at the Cattle Show at Brighton, report:—

That they award the premium for the best sow to John Prince, Esq. for that sow which he denominates his Essex and Blue China, 10 dollars.

The second premium to Dr. Francis Moore, of Brighton, for a sow from White's imported English breed, 5 dollars.

The premium for the best boar, of the breed denominated White's breed, mixed, to Luke Fisk, of Waltham, 10 dollars.

The premium for the second best boar, to the **Town of Cambridge*, being the Byefield mixed breed, 5 dollars.

The premium for the best store pigs, to Josiah Hovey, 10 dollars.

The premium for the second best store pigs, to James Robbins, 5 dollars.

For the premium on merino sheep, the committee regret that there was no competition, Gen. Austin being the owner of all which were offered.

The merino wethers, your committee deemed to be well entitled to the first premium, both for form and flesh, and they accordingly award it, 20 dollars.

The merino ram exhibited by General Austin, the committee did not deem to be of so superior a quality as to be entitled to the first premium, but they award the second of 10 dollars.

Your committee were of similar opinion in relation to his ewes. They therefore award the second premium of 10 dollars.

For the premium on native wethers, there was also no competition. They deem those offered by Stephen Howe,

*The said boar belonged to the poor-house establishment of that town.

worthy of a first premium, and they accordingly award it. 10 dollars.

For the Committee
JOSIAH QUINCY, *Chairman.*

REPORT.

THE Committee of the Trustees of the Massachusetts Society for the promotion of Agriculture, on the subject of inventions, report :—

That the machine called the flaxseed separator, offered by Mr. Hotchkiss, of Brattleborough, (Vermont,) embraces all the particulars specified in his statement, and is entitled to the premium proposed by the society of 20 dollars.

A washing machine was presented by Mr. Hodgdon, of Newton, for exhibition only, and not for premium, which consists of a rotatory tub, turned by a crank, operating on a horizontal block, the sides of which are planes inclined towards the centre of the tub, and doing its work chiefly by pressure, was put to trial in the family of Mr. Dudley, Innholder, Brighton, under the direction of your committee. On examination, all the persons who were experienced in such operations, and who had worked with it, and others, who had seen its effect, unanimously declared their opinion that it was the best machine for this purpose they had ever seen, and that it had done as much work in one hour, as it would have taken the same hand half a day to have performed in the ordinary way. This machine would have been entered for premium, had it not been for a misapprehension concerning our rules, for which Mr. Hodgdon is not responsible. Under the circumstances, your committee recommend to the trustees to award to Mr. Hodgdon, considering the nature of the machine, and its apparent utility, the sum of 10 dollars.

A rotatory churn, having a horizontal movement, was entered by Mr. Jennison for a premium. The only evi-

dence in relation to it was that given by Gorham Parsons, Esq. who, although favourably impressed towards it, yet preferred much the churn presented to the society by John Mackay. Under these circumstances your committee did not deem themselves authorized to award any premium.

A machine for threshing grain constructed upon a good, and as far as your committee was apprized upon a new principle, was presented by Mr. Asa Shattuck, of Pepperell. A model only of the machine was presented, so that your committee could not have the advantage of seeing its operations personally. The evidence adduced, was satisfactory, so far as it related to the trials therein specified. Your committee, however, from the evidence before them, were of opinion, that its effect was not superior to that for which a premium was formerly granted to Mr. Hotchkiss, nor did the evidence of the trials to which this machine had been subjected, amount, in the opinion of your committee, to proofs of that continued farming use, by a practical farmer, which, in their apprehension according to the promulgated rules of the trustees, would justify them in deciding that it is 'the best, the simplest, and least expensive machine for threshing wheat and other small grains.'

A machine for threshing and winnowing wheat, was presented by Mr. Gragg, of Londonderry. This machine was complete, and performed its work excellently, in both operations. It is simple, and considering its objects, not expensive, the cost complete being forty dollars, and it was said to be well calculated to thresh grain mown as well as reaped. The proprietor had however brought with him no certificates, nor had your committee any opportunity of putting it to such a trial as would justify their awarding any premium. They think so well of the machine, that they are of opinion that if the proprietor shall adduce certificates within three months of what it is capable of performing, and if said certificates shall be satisfactory to the board,

as to all the particulars stated in the published regulations, he will be entitled to the premium.

An invention was presented by Mr. Simon Willard of Roxbury, for *exhibition* only, and not for premium, being an alarm clock, every part of which was executed in his own manufactory, excepting the glass. The work was neat, elegant and simple, and well adapted for its purposes, and in every respect worthy of that ingenious and distinguished clock-maker.

A lead pipe for the conveyance of water, was also presented for *exhibition* only, by David Loring, the proprietor. The execution was neat, and as far as your committee could judge, from inspection, it would answer all the purposes specified in the advertisement of Mr. Loring, the proprietor.

There were also several other articles offered for premium, but no person being present to explain the principles or the operation of the machines, your committee deem themselves discharged from the necessity of reporting upon them particularly.

For the Committee,

JOSIAH QUINCY, *Chairman.*

Brighton, Oct. 11th, 1821.

REPORT.

THE Committee on Agricultural Experiments, to whom was also committed the inspection of several articles of Manufacture, Report :—

That four several lots or parcels of *Cheese*, of more than one year old, and twelve lots of new cheese, were offered for the Society's premiums; of the former, that from the dairy of Mr. Job Rainger, was considered to be the richest, best made, and best flavoured cheese, and is entitled to the premium of ten dollars;—that from the dairy of Mr. Elisha Matthews, the next best, and is entitled to the premium of

five dollars. Of the new cheese, that from the dairy of Mr. Daniel Hunter, was considered to be the best, and is entitled to the premium of ten dollars ;—that from the dairy of Mr. Nathan Rice, the next best, and is entitled to the premium of five dollars ; the whole of said cheese was made in the town of *New Braintree* in the county of Worcester.

Several parcels of *Butter* were also exhibited, all of them very fine. The lot entered by Mr. Stephen Hastings, of Sterling, in the County of Worcester, was considered to be the best made, and of good flavour, and is entitled to the premium of ten dollars ;—that entered by Mr. Luke Bennis, of Watertown, the next best, and is entitled to the premium of five dollars.

A great variety of *Vegetables* was brought to the Society's Hall for exhibition. His Excellency Governor Brooks caused to be exhibited some white globe turnips, of a very superior quality, the produce of his farm in Medford. Some uncommonly fine *Ruta Baga*, and Carrots, were sent from the farm of Gorham Parsons, Esq. ;—and from the same farm, some sweet potatoes, of a large size, and in no respect inferior to those of *Carolina*. From the farm of John Prince, Esq. some Mangel Wurtzel, and some white Russian Radishes, of a very large size. This species of the radish is cultivated in Russia for the purpose of feeding stock. Mr. Prince also sent to the Society's Hall, a specimen of Flax, of a good quality, produced and dressed on his farm in Roxbury. From the farm of E. H. Derby, Esq. some potatoes of the best possible size for the table, the growth of the present season from the shoots of the third and fourth planting of the same seed potatoes. Mr. Derby's account of four crops of potatoes, raised by him the present season, will accompany this report. From the farm of Gen. Hull, some large *Ruta Baga*, a particular account of the manner in which they were cultivated, will be communicated by Gen. Hull, to the Trustees, as soon as the crop shall have been taken from the ground.

Mr. C. C. Brown, of Watertown, exhibited some very large fine ears of ten and twelve rowed white corn. From the farm of Mr. Elijah Saunderson, in Waltham, two water melons, one of them weighing forty-two, and the other forty-seven pounds. Mr. Nathan Adams, of Medford, exhibited a large beet, a species of the Mangel Wurtzel, with some observations on its great utility as a food for milch cows.

Several specimens of sole leather, and dressed calves skins, were offered for the Society's premiums:—of the former the parcel entered by Mr. Samuel Hobbs, of Weston, was considered to be the best, and is entitled to the premium of ten dollars. Mr. Hobbs also exhibited some harness leather, of an excellent quality. The parcel of sole leather entered by Messrs. Benjamin Myrick & Co. of Roxbury, was adjudged to be the next best, and is entitled to the premium of five dollars. The calves skins entered by Mr. Nymphas Pratt, of Shrewsbury, were thought by the Committee to be the best; those entered by Mr. Thomas Prosser, of Roxbury, the next best. Several tanners and curriers, competent judges of the article, pronounced both parcels of calves skins to be dressed in a very superior manner; the former is entitled to the premium of ten dollars, and the latter to the premium of five dollars.

THOMAS L. WINTHROP, *Chairman*.

✂ The Committee on Agricultural Experiments will make an additional report early in December, before which time the evidence demanded by the Trustees, of the crops of the competitors for premiums, cannot conveniently be furnished.

ACCOUNT OF FOUR CROPS OF POTATOES RAISED IN ONE SEASON.

APRIL 10, 1821. Planted half a bushel of late potatoes, part kidney and part round ones, cut into sets in a hot bed

May 7. Transplanted first set of vines, as I should cabbages, and replanted the sets.

May 21. Transplanted the second set of vines, and replanted the sets.

June 5. Transplanted the third set of vines, and replanted the sets, and hoed the first and second set of plants.

June 30. Transplanted the fourth set of vines.

July 1. Commenced digging full grown potatoes from the first set of vines, since which my family (a large one) has been fully supplied, and I have lately commenced digging the fourth set of vines.

The potatoes exhibited, were taken from the third and fourth sets of vines, and there are very few small ones.

E. HERSEY DERBY.

Salem, Oct. 1821.

REPORT.

THE Committee on Agricultural Experiments, submit for the considerations of the Board, the following, in addition to their Report dated the 11th day of October last, to wit :—

That Payson Williams, Esq. of Fitchburg, in the county of Worcester, is entitled to the Society's premium of twenty dollars, for having raised the greatest quantity of Potatoes, being five hundred and fifty-one and a half bushels, on one acre of land. Mr. Williams has been a successful competitor for some of the premiums offered by the Trustees, three years in succession, which must be attributed to his skill in husbandry, and to the excellent management of his agricultural concerns. In his communication to the Committee, he states, that "he planted 24 bushels of potatoes, 3 of which were the Irish Apple, so called, imported from Liverpool, last winter, 3 the Fitchburg Whites, and the remainder the Rio de La Plata Reds.—The relative yield between the European, American, and South American, resulted in favour

of the reds of La Plata ; yet in quality, for the table especially, the Irish are far superior to either, and ripen four weeks earlier than the other kinds." The entire expense of cultivating this acre of land in potatoes, including the value of the manure, was eighty-four dollars and ninety-eight cents. Mr. Williams also claims the premium of thirty dollars, for having raised the greatest quantity of Spring Wheat, on one acre. The Committee, however, did not consider him to be entitled to said premium, the quantity raised not exceeding a medium crop for Massachusetts. In his letter to the Committee, he says, "The extreme drought of the season will account for a crop of no more than twenty bushels and twelve quarts of wheat from the acre.

That Messrs. Tristram, and Henry Little, of Newbury, in the County of Essex, are entitled to the Society's premium of thirty dollars, for having raised the greatest quantity of Indian Corn, being one hundred and five bushels and six quarts of sound corn, on one acre. In their statement they say, "The seed was the eight rowed yellow corn, selected in the field, the preceding crop, from the most fruitful, thrifty stalks—four or five kernels put into each hill—the hills were four feet by three feet apart: it was hoed three times, and the vacant hills filled up the first and second hoeing by transplanting from those that had four or five stalks, calculating to have three stalks in each hill."—The entire expense of cultivating the acre, including the cost of the manure, was thirty-nine dollars. Messrs. T. & H. Little, are also entitled to the premium of twenty dollars, for having raised the greatest quantity of common English Turnips, on one acre, being seven hundred and fifty-one bushels, 'completely trimmed, fit for the market—about two hundred bushels have been sold, some of them were sold by the ton, and have been weighed, and we find that they weigh fifty-four pounds to the bushel. The land was ploughed with a horse, and a double mould board plough, in ridges three feet apart—one row was sowed on each ridge, with a machine, which took one pound

of seed, and a hand roller was made to pass over each ridge, which completed the sowing, which was on the fourth of July. When they were out of the way of the fly, they were thinned, to the distance of one foot apart, on the ridges; they were twice ploughed and hoed: about the last of October they were harvested.' The entire expense of cultivating the acre, including sixteen dollars, the cost of nine cords of manure, was thirty-two dollars and thirty-three cents.

That John Prince, Esq. of Roxbury, in the County of Norfolk, is entitled to the Society's premium of twenty dollars, for having raised the greatest quantity of Mangel Wurtzel, being six hundred and forty-four bushels, on one acre. Mr. Prince says, 'The soil is a rich light loam, on a hard, gravelly bottom, on a hill descending to the South, having sixty apple trees in the above space, averaging fifteen feet high, which obliged me to have the rows directly up and down hill. The heavy rains washed, and very much injured the crop;—could they have been across, I doubt not one third more at least of roots would have been gained. The entire expense of cultivating the acre, including forty-six dollars for twenty-three loads of compost manure, was sixty-nine dollars and seventy-five cents, being 10 $\frac{1}{4}$ cents per bushel, of fifty-six pounds weight; from which must be deduced a large quantity of thinnings during the season, and also of leaves at the time of harvesting. Having succeeded perfectly in perserving my roots in the ground last winter, as published in the Repository, No. 3, volume 6, I have this year deposited, in precisely the same manner, most of the above crop, and also about four hundred and fifty bushels of Ruta Baga.'

That E. Hersy Derby, Esq. of Salem, in the County of Essex, is entitled to the Society's premium of twenty dollars, for having raised the greatest quantity of Cabbages, being forty-three tons, nineteen hundred and ten pounds, weight, on an acre.

Mr. Derby is also entitled to the premium of thirty dollars, for having raised the greatest quantity of Vegetables, (grain

peas and beans excepted) for winter consumption of the stock on his own farm. It will be seen by the certificates produced by Mr. Derby, and which accompany this report, that he raised the last season on his farm, 749 bushels of Mangel Wurtzel, 530 bushels of Carrots, 526 bushels of Swedish Turnips, 1288 bushels of Potatoes, 126 bushels of Russian Radishes, 757 bushels of common English Turnips, 43 tons and 19 hundred weight of Cabbages, and 15 ox cart loads of Pumpkins.

That Mr. David Little, of Newbury, in the County of Essex, is entitled to the Society's premium of twenty dollars, for having raised the greatest quantity of Ruta Baga, being six hundred and eighty-eight bushels, on one acre. 'The seed was sowed on the 12th and 13th of June, one on each ridge, which took 3-4ths a pound of seed, and covered with a light harrow, drawn by a horse, lengthways of the rows. July 5th, commenced ploughing between the rows, hoed and thinned them to the distance of about 10 or 12 inches. They were twice hoed and ploughed; the 8th day of November commenced harvesting;—six men and four boys pulled and trimmed off the tops fit for the market, in five hours; they were then measured—the product was six hundred and eighty-eight bushels.' The entire expense of cultivating the acre, including the cost of four cords of manure, was twenty-three dollars seventy-nine cents. Mr. Little also raised five hundred and thirty bushels of common Beets on one acre.

That Mr. William Mears, of Marblehead, is entitled to the Society's premium of twenty dollars, for having raised the greatest quantity of white Beans, being thirty-two bushels and four quarts, on one acre.

That Thomas Shepherd, Esq. of Northampton, in the County of Hampshire, claimed the Society's premium of thirty dollars, for making the most satisfactory experiment to ascertain the best mode of raising Indian Corn; having raised sixty-one bushels and twelve quarts of corn, and one

hundred and sixty bushels of ruta бага, on one acre. In his letter to the Committee, Mr. Shepherd makes the following statement:—‘the acre was sowed in alternate rows of corn, and ruta бага, the corn rows being eight feet apart. The whole field of nearly twenty acres, except the acre that produced eighty-seven bushels and $\frac{24}{32}$ was sowed in rows eight feet apart; and the half acre, which yielded sixty-one bushels and twelve quarts was not better than a fair average of the field. It is my belief, that seventy-five bushels of corn, and three or four hundred bushels of ruta бага, (or two or three hundred bushels of potatoes,) can be raised on one acre of good rich ground, cultivated in this way; but the corn must be sowed very thick in rows, eight feet apart, and the ditch well filled with fine mellow earth, and plenty of manure; nor is it an expensive mode of culture, considering the great crop to be obtained. The cross ploughing and furrowing is extra work; but this it is, with the aid of the harrow, that makes the great crop, if sowed in wide rows, as my experiment this year proves, having got at the rate of one hundred and twenty-two bushels and $\frac{24}{32}$ to the acre, in this way; and in the narrow rows, with more exhaustion of the land, only eighty seven and $\frac{24}{32}$ bushels.’ Your Committee have not awarded to Mr. Shepherd the premium claimed by him. The width of the rows, as recommended, favours unquestionably very much the growth of the corn; and the crop, taking into the calculation the ground actually occupied by it, was certainly very great; still your Committee are not convinced that Mr. Shepherd is entitled to the premium for making the most satisfactory experiment for ascertaining the best mode of raising Indian corn. Much praise is due to Mr. Shepherd, for the extensive and correct manner in which he has, for several years past, cultivated one of the finest farms in New-England. Mr. Shepherd also claims the Society’s premium of thirty dollars, for introducing a grass

superior to any before cultivated in this State, which your Committee would most gladly award to him, could they, after due consideration, believe him to be entitled to it; but from their own observation, and the best information they have been able to obtain, they entertain doubts if the clover supposed by him to be altogether a new one, be such. 'The stalk,' says Mr. Shepherd, in his letter to the Committee, 'is very small, and when ready to cut for hay, the whole field looks like a cherry tree fully ripe. It never lodges; and nothing can exceed the beauty of the field when in full blossom; it is short and does not yield, the first cutting, so great a burthen as the common clover, but in a season much more; it will remain in the ground, and yield a crop the third year, but perhaps it seeds itself partly, it will do two years. Being satisfied that the second crop would give seed before the frost set in, I have this year made the second trial, with the most complete success, having obtained from the rowen clover nearly two hundred pounds of seed to the acre.' It is understood by your Committee to be the general practice with the farmers in the states of Connecticut, New-Hampshire, and some parts of Massachusetts, to procure their seed from the second crop of red clover. In Pennsylvania, says Dr. Mease, in his Domestic Encyclopedia, the pratense, or common red clover, annually produces three or four crops for two years at least; the seed is collected both from the first and second crop, but principally from the former. Mr. Eliot wrote his Treatise on Husbandry, a work held in high reputation by all agriculturists, more than seventy years ago; he says, land in good heart will bear two crops of clover in a season, and recommends saving the second crop for seed.

Claims for premiums were also exhibited to your committee by Thomas Shepherd, Esq. for having raised eighty-seven bushels and three-fourths of a bushel of Indian corn, on one acre. Col. Samuel Wright, of Westford, in the

County of Middlesex, for having raised seventy eight bushels and five quarts of Indian corn, on one acre. Mr. John Dwinell, of Salem, for having raised five hundred and twenty bushels of carrots on one acre; and on the like quantity of land, five hundred and eighteen and a half bushels of potatoes. And John Prince, Esq. for having raised the greatest quantity of vegetables, (grain, peas and beans excepted,) for winter consumption of the stock on his own farm.

For raising the greatest quantity of parsnips, common beets, onions, and dry peas, for proving by actual experiment, the best season, and mode of laying down lands to the grass, whether Spring, Summer, or Fall seeding, be preferable, and with or without grain, on different soils; for soiling cattle; for turning in green crops as a manure; for the greatest quantity of good honey, and superior skill in the management of bees; for the best mode of rearing, feeding, and fattening neat cattle; for the best superfine flour, manufactured in the State of Massachusetts, from wheat raised in this State, no claims for premiums were made; these several objects are of great importance to the Agriculturists of this Commonwealth, and deserve, and the Committee hope will have their attention, in the coming year.

By order of the Committee,

THOMAS L. WINTHROP, *Chairman*.

Boston, Dec. 22d, 1821.

Newbury, November 14, 1821.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMAN,

THE following is a statement of the production of one acre of land cultivated with Indian corn, by the subscribers

on our farm in Newbury in 1820, and 1821, the soil is a dark clay loam. In 1820, one third of the land was cultivated with flax, and manured with night soil, and it gave us a handsome crop, the other two thirds was planted with corn and manured with six cord of compost manure to the acre, it gave us one hundred and three and a half bushels to the acre. In April, 1821, ploughed and cross-ploughed again about the 20th of May, the twenty-fourth it was planted in the following manner, in hills four feet by three apart and the manure put in the hill at the rate of six cord to the acre, the manure was made in the barn yard the preceding year, and drawn on to the land in the fall 1820, the seed was the eight rowed yellow corn, selected in the field the preceding crop from the most fruitful thrifty stalk, there was four or five kernels put in each hill, it was hoed three times, and the vacant hills filled up the first and second hoeing by transplanting from those that had four or five stalks, calculating to have three stalks in each hill. One half pint of ashes was put on each hill in every alternate row after the first hoeing, but we saw no advantage by so doing, the stalks were topped about the 20th of September, and the 20th of October, the crop was harvested and measured, and there were two hundred and ten bushels in the ear, and a fraction over, which fraction was shelled, which made six quarts, there was a number of bushels of ears shelled, and found that two bushels in the ear would make one in the kernel, that we had one hundred and five bushels and six quarts of sound corn.

EXPENSES.

Rent of the land,	-	-	-	-	-	\$9 00
Ploughing twice over,	-	-	-	-	-	3 00
Manure,	-	-	-	-	-	12 00
Drawing the manure, and planting,	-	-	-	-	-	8 00
Hoeing three times.	-	-	-	-	-	3 00
Harvesting,	-	-	-	-	-	4 00

\$39 00

The stalk or stover, we value equal to one and a half ton of English hay.

TRISTRAM LITTLE,
HENRY LITTLE, *Owners.*

This may certify that I have assisted in harvesting and measuring the above crop of corn, and there was one hundred and five bushels and six quarts. JOHN SMITH.

This may certify that I have measured the above acre of land planted with corn, to the best of my skill and judgment, and there is one acre and no more.

SILAS MOODY, *Surveyor.*

ESSEX, ss.

November 26th, 1821.

Then the above named Tristram Little, Henry Little, John Smith, and Silas Moody, made solemn oath, to the truth of the above certificates by them several signed, before me.

EBENEZER MARCH, *Justice Peace.*



Newbury, November 14, 1821.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN,

THE following is a statement of the production of one acre of land cultivated with the common English turnip on our farm in Newbury the present year, the soil is a clay loam and has been down to grass five or six years, in 1820, cut about one ton of hay, the present season cut sixteen hundred; after the hay was off the ground, which was the 1st of July, the land was ploughed, nine inches deep, eight cords of manure was spread on, and the land well harrowed, the manure was a compost about three quarters marsh sod (from the ditches on the salt marshes,) and the remainder was made by the cattle and sheep, &c. well mixed. The land then was ploughed with a horse and double mould

board plough, in ridges three feet apart, one row was sowed on each ridge with a machine, which took one pound of seed and a small hand roller was made to pass on each ridge, which completed the sowing, which was the 4th of July, when they were out of the way of the fly, they were thinned to the distance of one foot apart on the ridges, and they were twice ploughed and hoed about the last of October they were harvested and measured, the produce was seven hundred and fifty-one bushels, completely trimmed fit for the market, about two hundred bushels have been sold, some of them sold by the ton, and have been weighed. and we find that they weigh fifty-four pounds to the bushel.

Yours, Respectfully,

TRISTRAM LITTLE.

HENRY LITTLE.

EXPENSES.

Ploughing and harrowing,	-	-	-	-	\$4 00
Manure,	-	.	-	-	16 00
Seed,	-	-	-	-	50
Ridging the land and sowing,	-	-	-	-	1 50
Thinning,	-	-	-	-	2 67
Hoeing,	-	-	-	-	2 33
Harvesting,	-	-	-	-	5 33

\$32 33

This may certify that I have measured and staked off the above land cultivated with turnips, to the best of my skill and judgment, and there is one acre and no more.

SILAS MOODY.

This may certify that I assisted in harvesting the above stated crop of turnips, and there was seven hundred and fifty one bushels.

JOHN SMITH.

Essex, ss.

November 26, 1821.

Then the above named Tristram Little, Henry Little, Silas Moody, and John Smith, made solemn oath to the truth of the above certificates by them severally signed, before me,

EBENEZER MARCH, *Justice Peace.*

Fitchburg, November 12, 1821.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN,

I AGAIN trouble you with an account of the product of one acre of potatoes cultivated by me the present year, and entered at Brighton, in conformity to your rules.

The land from which the crop was taken, is situated on the top of a very heavy swell or hill, the soil a deep, dark loam, which has probably been under cultivation for forty or fifty years.

In the June, of 1820, broke the ground, turning under a good crop of English grass, which was left to ferment during that summer and in the spring of 1821, after spreading on twenty-six buck loads of manure of thirty-three bushels each, on a part of the field (the manure made by neat cattle during last winter,) was cross-ploughed and harrowed, then struck the furrows three feet apart both ways at right angles, and on the remaining part put fourteen bucks of sheep litter in the holes at the intersection. The potatoes planted between the twenty-third and twenty-ninth of May. The seed used was twenty-four bushels; three of which was the Irish apple, (so called,) imported from Liverpool last winter, three of the Fitchburgh whites, and the remainder the Rio-de-la-Plata reds.

1st. Having performed 18th and 19th June, 2d, do. 25th and 26th after which in July, the weeds were eradicated by the hand hoe. On harvesting the crop in October, found five hundred and fifty-one and a half bushels to the acre. I would here observe that the relative *yield*, between the European, American, and South American, resulted in favour of the reds of La-Plata, yet in quality (for the table especially,) the Irish are far superior to either, and if we take into view their *earliness*, (getting ripe at least four

weeks sooner than the other kinds,) their cultivation in this country must be advantageous, particularly so to the farmers in the immediate vicinity of our cities and large towns whose opulent inhabitants are ever ready to pay *roundly* for the luxuries of the table. The product from three bushels, of the Irish potatoe (cut in the usual way) was forty bushels which no doubt would have been much greater, had the seed not have vegetated on ship-board so much; a circumstance probably not to be avoided in their transportation across the Atlantic. The next year this potatoe will have a fair *trial*, what I shall not plant will be disposed of at a reasonable price for the like purpose.

PAYSON WILLIAMS, *Owner.*

AARON BIXBY, *Assistant.*

EXPENSES.

Breaking up the ground, five cattle and two men, one	
day, - - - - -	\$4 00
Plough for one day, - - - - -	0 75
Cross ploughing, - - - - -	2 50
Plough for do. - - - - -	0 50
Harrowing and furrowing, - - - - -	2 00
Forty loads manure, at one dollar, - - - - -	40 00
Twenty-bushels potatoes for seed at 25 cents, - - - - -	6 00
Whole expence of getting out the manure and planting, - - - - -	9 00
Expence of hoeing, - - - - -	7 50
Nineteen days work havesting, at sixty-seven cents, - - - - -	12 73
	<hr/>
	\$84 98

WORCESTER SS.

November 15, 1821.

Personally appeared, Payson Williams, and Aaron Bixby, and severally made oath, that the above communication, by them respectively subscribed, contains the truth, before me,

CALVIN WILLARD, *Justice Peace.*

Roxbury, November 30, 1821.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN,

I HAVE this year raised a crop of Mangel Wurtzel, of which I now give you the result. The land was a grass in the spring of 1820; it was broke up early and sown with oats, which were cut in the milk and estimated near two tons to the acre; a very light dressing of compost manure was then given and lightly ploughed in, and was then sown with the common Turnips in rows, and produced a tolerable crop. In April and early in May this year, it was twice ploughed and harrowed, when twenty-three ox cart bucks of good compost manure, was dropped in the furrows made by the double mould board plough two feet and a half apart and covered by the same, and the seed sown by the fingers on the ridge (after flattening) at about six inches apart on the 15th and 16th May. The 8th June, they were hand and horse hoed, and the extra plants thinned out and weeded. The 22d June, some vacancies were filled up by transplanting. The 28th June again earthed up by the double moulded plough, and again on the 17th August; no more labour was bestowed, (except thinning out so as to have the plants about one foot apart, which were given daily to the hogs for a considerable time.) The 22d and 23d of October, they were all gathered, when the amount of crop was found to be 586 baskets, each of which would contain $1\frac{1}{4}$ bushel of Potatoes. One cart load of 26 baskets, I weighed myself, and found the net average to be $62\frac{1}{4}$ pounds, making 36771 pounds; at 56 pounds per bushel is 656 $\frac{1}{4}$ bushels on one acre and 3 rods, or 644 bushels per acre. The soil is a rich light loam on a hard gravelly bottom, on a hill descending to the south, having 60 apple trees in the above space, averaging fifteen feet high, which obliged me to have the rows directly up and down hill, the heavy rains washed and very much injured

the crop. Could they have been across. I doubt not one-third more at least of roots would have been gained, the expence as follows :

21½	days work of men, at	-	-	35 cts.	-	-	\$18 27
4½	" " " boy, "	-	-	54 "	-	-	2 30
3	" " " oxen, "	-	-	85 "	-	-	2 55
¾	" " " horse, "	-	-	85 "	-	-	63
23	loads compost manure worth	-	-	-	-	-	28 46

\$69 75

Cost 10½ cents a bushel of 56 pounds, besides a large quantity of thinnings, during the season, and also of leaves at the time of harvesting; having succeeded perfectly in preserving my roots in the ground last winter, as published in in the Repository, No. 3, vol. 6. I have this year deposited in precisely the same manner, most of the above crop, and also about 450 bushels of Ruta Baga.

It seems hardly fair that *all* the cost of manure should be charged to this crop, deducting one half the value thereof, presuming that the field must be at least so much benefited; the actual cost of the roots would then be little more than seven cents a bushel.

I am gentlemen, with respect, &c.

JOHN PRINCE.

We the subscribers hereby certify and declare, that we have worked on the farm of John Prince, Esq. during the whole of the past summer, that we assisted in the cultivation of a piece of ground with Mangel Wurtzel, that we have seen the statement above, made by Mr. Prince, of the culture thereof, and the produce, and hereby attest to the accuracy thereof.

EPHRAIM DOWNES.

MIKEL HENRY.

NORFOLK, ss.

Roxbury, November 30, 1821.

Then the above named John Prince, Ephraim Downes and Mikel Henry, appeared and solemnly swore to the truth of the above by them signed, before me,

JOHN PARKER, *Justice Peace.*

Roxbury, October 16, 1821.

I Mather Withington, of Dorchester, a sworn surveyor having been requested therefor by John Prince, Esq. of said Roxbury, hereby certify, that I have this day, surveyed a piece of ground on which he now has a crop of Mangel Wurtzel growing, and find it to measure one acre and three rods, there are also growing on said ground near sixty apple trees of twelve to eighteen feet high.

MATHER WITHINGTON, *Surveyor.*

Salem, November 30, 1821.

DEAR SIR,

I have raised the present season the following quantity of vegetables, the most of which I expect to consume in the winter, feeding my stock on the farm.

3200 early cabbages, at	4 1-2 lbs.	14400 lbs.	or tons	6 8 2 3
29 loads 6144 Savoy's,	- " 5 3-4 "	35328 "	" " "	15 15 1 20
23 " 4873 drum heads,	" 10 "	48730 "	" " "	21 15 0 10

Tons. 43 19 0 10

Cabbages, at 56 pounds per bushel,	-	-	-	1758
Pumpkins, 15 Ox cart loads,	-	-	-	750
Potatoes,	-	-	-	1288
Beets and Mangel Wurtzel,	-	-	-	749
Carrots,	-	-	-	530
Swedish Turnips,	-	-	-	526
Russian Radish,	-	-	-	126
English Turnips,	-	-	-	757

Bushels, 6484

The work of my farm has been so blended, I find it extremely difficult to ascertain the exact cost of each kind of vegetable, having been favoured this year with a good set of men, and allowing little or no spirit, but plenty of good beer, I think I can state they have been all raised at a moderate

expense. The cabbages at the best, the English turnips the next, and the carrots by far the greatest expense.

Having two large barn cellars, I have put a large portion of the roots into them. Most of the Swedish and common turnips ; I have placed on the barn floors, and covered them with salt hay, which mode answered perfectly the last season. For the cabbages I have selected one of the most airy situations on the farm, spread a few leaves on the ground to keep them clean, and placed them upside down, close to each other, and shook in among them leaves sufficient to cover them, leaving part of the roots projecting out, then threw on just enough sea weed to prevent the leaves blowing away. I adopted this course two years since, and kept them in fine order until 15th of April. I am indebted to Cobbett for this mode of preserving the cabbages. My store pigs have been kept for the last three months upon boiled cabbage mixed with bran and water, and fomented for 24 hours, and are all in fine order. I am sir, yours, &c.

E. HERSY DERBY.

THOMAS L. WINTHROP, Esq.

Chairman of the Committee on Agricultural Experiments.

We certify that we were employed by E. Hersy Derby, in taking up, securing and keeping an account of the vegetables raised by him except the summer cabbages, and the quantity stated by Mr. Derby, we know to be correct.

DAVID G. CROMBIE,
HEMAN GIBBS.

ESSEX, SS.

Salem, December 11, 1821.

Then David G. Grombie and Heman Gibbs, personally appeared and severally made oath that the affidavit by them above subscribed was true, before

JONATHAN P. SAUNDERS, *Justice Peace.*

Salem, November 30th, 1821.

DEAR SIR,

The ground on which the cabbages were raised is a moist loamy soil, rather shallow, upon a substratum of clay. It

produced a very good crop of potatoes the last year with a moderate dressing of manure, was twice ploughed this spring and eleven loads of leached ashes and the same quantity of burnt clay from the Salem laboratory were spread before the second ploughing. The seed was sown 26th of May, and began transplanting 23d of June. The savoys were set in squares two feet, by two, the drumheads a little farther apart, and both were hand hoed three times during their growth. Commenced taken them up 19th, and finished 24th of November, had they been pulled the first of the month I have no doubt there would have been over forty tons, as a great many of the outer leaves had fallen before they were weighed. I am, Sir,

Yours, with respect,

E. HERSY DERBY.

THOMAS L. WINTHROP, Esq.

Chairman of the Committee on Agricultural Experiments.

Newbury, November 29, 1821.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN,

THE following is a statement of the produce of an acre of land cultivated with Ruta Baga, on my farm in Newbury, the past and present year, the soil is a dark loam on a gravel bottom, cultivated with potatoes in the year 1820, it was broken up in the fall of the year 1819, and in the spring following, it was ploughed across the furrows and harrowed, then furrowed in squares, of about three feet, about four cords of manure from the sheep yard was put into the squares and the potatoes put upon the dung, the crop very small owing in a great measure to its being injured by a large red headed worm, (commonly known by the name of the dung worm,) in May 1821, the land was ploughed eight or nine inches deep and harrowed, June 12th, furrowed the ground deep three feet apart and put four cords of compost

manure into the furrows, about half was from bogs, the remainder was from the sheep and cattle, the dung was then covered by turning a ridge upon it, a harrow then was drawn by a horse length ways of the ridges, the seed was then sowed the 12th, and 18th of June, one row on each ridge which took three-fourths of a pound of seed, and covered it with a light harrow, drawn by a horse length ways of the rows, July 5th, commenced ploughing betwixt the rows, then hoed and thinned them to the distance of about ten or twelve inches, they were twice ploughed and hoed, the 8th of November, commenced harvesting, six men and four small boys pulled and trimmed off the tops fit for the market in five hours, they were then measured, the product was six hundred and eighty eight bushels, two cart loads of the average size, containing forty-six bushels each, and one cart load of a smaller size, containing forty-five bushels have been weighed, at the scales by the weigher and his certificate of the three loads weighed is annexed to this. I have also cultivated one acre of beets the present year, for which I entered my name for premium, but as my crop falls short, amounting only to about five hundred and thirty or forty bushels I conclude that my mode of culture will add nothing to the stock of general knowledge, therefore I wish to be excused from making a particular statement on that subject.

I am yours,

with great respect,

DAVID LITTLE.

Statement of expense of cultivating one acre of Ruta Baga on the above plan, calculating labour at four shilings per day.

Ploughing and harrowing,	-	-	-	-	\$2 00
Four cords of manure,	-	-	-	-	12 00
Three fourths of a pound of seed,	-	-	-	-	1 12½
Furrowing, ridging and sowing,	-	-	-	-	1 33
Ploughing, thinning and hoeing,	-	-	-	-	4 67
Harvesting.	-	-	-	-	2 67

\$23 79½

I hereby certify that at the request of David Little, I measured a piece of land on his farm, and set off therefrom one acre, having ruta бага thereon.

TRISTRAM LITTLE.

This may certify that I assisted in harvesting and measuring the above crop, and the produce was six hundred and eighty eight bushels.

RICHARD STICKNEY.

ESSEX, ss.

November 30, 1821.

Then the within named David Little, Tristram Little, and Richard Stickney, made solemn oath to the truth of the several certificates, within written, and by them respectively subscribed, before me.

EBENEZER MARCH, *Justice Peace.*

I hereby certify that I weighed three loads of Ruta Baga, for Captain David Little, which weighed as follows.

	cwt.	qrs.	lb.
1821, November, 3th, first load,	22	0	00
This load smaller size, do. second load.	18	3	00
November 9th, third load,	21	0	20

EZRA HALE.

Salem, September 7, 1821.

[To the Trustees of the Massachusetts Agricultural Society.]

THE subscriber in support of a claim heretofore entered for the Society's premium for raising the greatest crop of beans, offers the following statement of the manner &c. of cultivating the lot, its situation and amount of crop.

The lot is part of a farm owned by Messrs. N. and J. Hooper, situated near the boundary line of the towns of Lynn, and Salem, has been broken up for about four years, the present year was dressed with about ten load, (one yoke of oxen) of barn manure, ploughed and sowed in usual way,

after crop was up, the rows were harrowed once, with horse harrow and hoed, and once after that, the weeds were cleaned by hand, the sowing was about 10th of May and gathered about 20th August, and the whole amount of crop was thirty-four bushels and twelve quarts of clean beans.

Respectfully, &c.

WILLIAM MEARS.

We hereby certify that the statement made within, by Mr. William Mears is correct, that we were present at the measuring of the crop of beans raised on said lot, and that the same was thirty-four bushels and twelve quarts.

WILLIAM HATHAWAY.

DANIEL BUTLER.

ESSEX, SS.

December 21, 1821.

Then William Hathaway, and Daniel Butler, made oath that the statement and affidavit by them above subscribed, was true. Before

JONATHAN P. SAUNDERS, *Justice Peace.*

[We insert the following letter of Anthony Dey, Esq. *entire*, both on account of the interesting nature of the topics therein discussed, and the clearness with which the facts are detailed.

We have not thought we had a right without his permission to separate it, or else in conformity to our general rule we should not have inserted *that part* which relates to his own machine for cleaning flax, and which it is manifest he thinks *superiour* to Hill and Bundy's, which has made so much noise in Europe. It may be so, and we hope it will so prove; and we are ready to give Mr. Dey all the advantage to which his enterprize and skill entitle him by announcing the progress he has made, but we beg it to be understood, that no opinion is expressed by the editors of this work on the subject. Time, the best critic on human arts and inventions, will decide its fate. We wish complete success to the undertaking.

EDITORS.]

New-York, December 1, 1821.

SIR,

IN pursuance of the promise made you, I will endeavour to give an account of my operations in relation to flax.

The land on which I cultivated about sixty acres of flax, the present year, is reclaimed salt marsh adjoining the Passaic River opposite the town of Newark, in the State of New-Jersey. The three preceding years I had put it out on shares and deriving little or no advantage from it, I determined about a year ago, to dispose of it. The tenant had not cleaned the ditches during that time, and it may be said truly, it was in a very unpromising condition to raise a crop of flax. Flax among our farmers had been very little cultivated, although the crop is considered generally as sure, as any other in husbandry, yet the risk and labour of rotting and cleaning was such, that it was only raised in small quantities and then from necessity to supply the farmers wants. I had never cultivated it upon my farm or turned my thoughts towards it, until about the close of the last year, when I saw a sample of beautiful flax resembling floss silk, the plant of which had been dressed in an unrotted state, in a machine invented by Messrs. Hill and Bundy of London, or one of them, and reduced to its beautiful state by some chemical process.

My attention was immediately turned to the subject, *first*, to ascertain if my land was adapted to the cultivation of flax, and *secondly*, as to the profits to be derived therefrom. I did not apprehend at the time there would be the least difficulty in procuring from England the machines and a knowledge of the mode of preparation to bring the flax into its beautiful white state.

I soon became satisfied that my land *was good* for raising flax or hemp, if properly managed; and after estimating the expense, and the probable result, I determined it *was profitable*. And if it was profitable on a small scale, it was also on a large one, and therefore I not only determined and entered into a contract to have sixty acres of my own land laid down in flax, but I contracted with several farmers to the extent of about forty acres more, the plant of which they were to deliver me as it came from the field at the rate of eight *dollars* per. ton. (under the expectation

that the land would yield three tons to the acre.) Thus you see I stood committed for about one hundred acres of flax.

My examination had satisfied me, that in England *two bushels* of seed was considered the best quantity to be sown on an acre of land, if the object was to cultivate *for flax*; if *for seed*, which heretofore has been the great object in this country, a much less quantity. I enquired of every practical farmer, that came in my way, but I lament to say, I found not one, who had ever made an actual experiment with flax, to test the result, and the most I could obtain was, that some had sown a half bushel of seed and some three pecks, and it had produced about so many bushels of seed and so many pounds of flax, in one year, and about another quantity in another year, but as to the quantity of land they knew not, nor the quantity of flax by actual weight. It had been sown in broad cast and it depended therefore very much upon the length of the sowers legs and the manner of using them, whether a greater or less quantity of land was sown. One important item I did ascertain, namely, never to sow the seed on the same soil it was raised on, but to change it.

These circumstances determined me to make an experiment and observation upon every measure I pursued, that I might test the result, and compare with others, who like myself might unknown to each other be pursuing a like course. I found various opinions as to what seed was best, I therefore determined to take five different kinds, namely, (1) Rhode Island, (2) from the country north or west of Albany, (3) from Queens County, on Long Island, (4) from the town of Bergen, in New-Jersey, and (5) also, seed from Essex County in the same state. I began to sow on the 30th of March, and continued to sow every week until the last week in May. My land was intersected with ditches and divided into small lots from two to five acres each, and the day of the month and the kinds of seed sown

was carefully noted, that I might be able to judge which was the best time to sow, and the best seed.

The flax sown on the 31st of March, was about two inches high when the severe snow and hail storm of the 17th and 18th of April, last took place. I expected it would have been destroyed, but it was not, and yielded on weighing each and every load that came from it, a little more than one ton of the plant or stem to the acre. I considered it my worst lot, my best lot was sown the last week in April, upon a green sward and harrowed well, it yielded a little less than two tons to the acre. I impute this difference, principally to the circumstance of the storm on the first lot, which retarded its growth and gave the weeds an opportunity to struggle with the plant, and to the almost total absence of the weeds on the *green sward*. The whole crop averaged about one and a half tons to the acre.

I cannot say, that I perceived any difference arising from the kind of seed sown, but the time when sowed is important, in my District of country, I consider any time from the 20th of April, to the 10th of May, the best time. All the seed was foreign to my soil. It was all choice seed of its kind and had been selected, and cleaned by the seed merchant in New-York, and set apart by him to sell to the farmers for seed, *except* one single parcel of seed from Essex County which was not so. That seed was foul having a considerable quantity of milberry as it is called in England, or as it is sometimes called with us negro head. I remark in order to show the necessity and importance of having clean seed. That one of my friends whom I had prevailed upon to sow ten acres, lost his whole crop that was completely destroyed by the milberry, it entwines itself around the flax plants and completely brings them down to the earth. If he had taken the trouble of sending to the city of New-York and obtained clean seed it would not have happened.

A gentleman from Columbia County, in this State, informed me, he found it necessary to change his seed every

year, and he found the seed raised on land near the sea, better than what was raised north or west of him. That in two years his flax would degenerate so much as to make the crop scarcely worth pulling. I have now a hank of flax sent me from Minisink, a town in Orange County, it was prepared and cleaned in the old way, and measures 4 feet in length as dressed, and is of a fine quality. It is called sapling flax, and produced 900 weight of clean flax, (as is said) to the acre. I have sent to procure a quantity of the seed at any price, that I may cultivate it for the seed.

One of my lots was sown in the morning of Saturday, the 19th of May, there was a shower in the afternoon, and on Monday morning the flax was bursting through the earth, throughout the lot. It was a fine lot of flax, free from weeds, but according to my judgment and that of my farmer, the best lots of flax, as I have before observed, were those that had been sown between the 20th of April and the 10th of May, and there was no perceivable difference between them.

As I sowed two bushels of seed to the acre, with a view to a crop of flax and not seed, so I pulled my flax as it was passing from the blossom to the boll. The seed was not yet formed, the boll was in milk, but it will nevertheless yield from 4 to 5 bushels seed to the acre, fit for crushing or feeding.

I would recommend, if the farmer cultivates for flax, to sow two bushels to the acre, and to set apart one or more acres for seed, to sow 3 pecks to the acre; from all the information I have been able to obtain, that is the best quantity to be sown, if you cultivate for seed, but the flax when dressed will be too coarse to make fine linen, and cannot be made as white by my process of bleaching.

As I contracted for all my flax concern, I paid at the following rate, namely :

For ploughing, harrowing and sowing seed per acre,	3
For two bushels of seed per acre, - - -	3
For pulling and spreading on the ground per acre,	3
For drying, bundling and carting <i>to the barn</i> , -	\$1 50

where my flax now remains until my machine can be set in motion by horse or ox power, which I hope will be before January next.

In the month of February or March last, I learned that it was impossible to obtain the English Machines, the British government had refused, on the application of Mr. Rush, the American Minister, to let them come. I then directed my attention to having them made in imitation of the English Machines, as represented in the 8th number of the Journal of Arts and Sciences, published in London, and republished in New-York, by Mr. Eastburn. I employed two persons in this city, who undertook to make them, warranted good, and after keeping me in suspense until August last, produced at length, a Breaker and Rubber, for which I paid them \$200, which are literally good for nothing. At the time these machines were about to be delivered, I employed Mr. James Macdonald, to set them, together with others I contemplated to have made, in operation, by animal power, but finding them as I have before mentioned, useless, I threw them aside and employed Mr. Macdonald to make me one on an entire new plan. This has succeeded to my wishes, and a Certificate given me by several gentlemen who saw the machine operate is as follows :

CERTIFICATE.

“We were present at a trial made of a newly invented machine, made for dressing flax or hemp in an unrotted or unretted state, belonging to Messrs. Anthony Dey and James Macdonald of this city. The machine is constructed to go by water or animal power, but on the trial was worked with facility by four men ; one of the subscribers held a watch by which it was ascertained, that three ordinary lengths of flax plant, *unrotted*, were carried completely through the machine in less than one minute, and three lengths of hemp through in a little more than one minute. It is estimated that when driven by the proper power, the machine will clean one ton of flax plant or hemp, rotted or unrotted, in a day, and Mr.

Day exhibited and gave each of us a sample of flax in a fine beautiful white state, resembling floss silk, which he estimates, from the experiment he has made, may be cleaned through the machine and reduced to its beautiful state for about two cents a pound, and informed us that in doing it, he did not make use of any other preparation, than is to be found in every farmer's house in abundance, and which was done after the flax had passed through the machine. New-York, November 1821.—T. L. Ogden, David B. Ogden, Richard Varick, Rudolph Bunner, Lekay de Chaumont, George Brinkerhoff, Benjamin L. Swan, George Griswold.

An opinion has gone abroad, that this machine is nothing more or less than a copy of Hill and Bundy's machine—the following affidavit, independent of one moment's view of the machine, will satisfy every person I hope to the contrary.

AFFIDAVIT.

William Wright, at present of the city of New-York, mill-wright and machine maker, being duly sworn according to law did depose and say, That in the Year of our Lord, 1817, and part of the year 1818, he resided, in Rathbone place, in the city of London, and worked at No. 422, Oxford-street London, part of the time aforesaid he was employed in making the breaker and rubber of Hill and Bundy's flax machine ; that in the year 1819, he left England, and went to the city of Philadelphia, in the State of Pennsylvania, that in the month of October last, he came to the city of New-York, and has been employed under the direction of James Macdonald, in *finishing* a hemp and flax dressing machine for Anthony Dey: 'hat having made many of Hill and Bundy's machines, he is enabled to say, that the one constructed by Mr. Macdonald for Mr. Dey, is totally unlike Hill and Bundy's having nothing about it, at all like those of Hill and Bundy, and as far as he knows or believes it is unlike, in every particular, any machine he ever saw or heard of for breaking or cleaning hemp and flax."—Sworn, &c.

Signed, WM. WRIGHT.

After several experiments, I produced the sample of flax I sent to you, and which you received from General Sumner. When my patent right to this discovery is secured, I will then disclose the process. Suffice it to say, at present that the material with which it is accomplished is not only cheap, but in every farmer's house in abundance, and will in no degree, I think injure the quality of the fibre, and while Hill and Bundy's flax cost them six pence per pound sterling, equal to about 11 cents of our money, to clean and bleach, I am satisfied from the experiments I have made, that cleaning in the machine and bleaching by my process can be done for about two cents a pound. It remains for me to shew that it is *profitable* to raise flax. I know an opinion prevails that flax is an exhausting crop, and that two crops cannot be raised in succession, but I have never yet met with an individual who says he has tried it. The same 60 acres which I cultivated this year in flax, I contemplate to put, part again in flax the next season and then seed it down with grass seed, and the residue with about 40 additional acres in hemp. I shall be able then to test the principle. I do not believe that upon such strong soils as our reclaimed Marshes, we can exhaust the soil or any principle in it by the same kind of crop, in two or three successive years, *where those crops are not permitted to go to seed.*

Buckwheat is considered a great scourge when it is permitted to go to seed, but Buckwheat is sown for manure and when in blossom ploughed under. It must therefore, I think, *be the seed*, which exhausts that principle in the soil that requires a change before the crop is renewed. Admitting however that I am wrong, yet there is hardly any Farmer, that cannot prepare and set apart ten acres out of his farm annually for flax, his land should be put in good condition, for unless it is, it ought not to be sown with flax, and if in good condition will yield I think, beyond doubt, one and an half tons of plant or stem to the acre. The English calculate 3 tons to the acre, but I can only say, I think it is incorrect. There is a market at Patterson in New Jersey, to make sail cloth, and in our cities for more flax to make cor-

dage, than will be raised these five years in our country, after retaining what is required among the farmers for family purposes.

Suppose then a farmer raises ten acres of flax at one and an half tons of plant to the acre. The owner of one of the flax and hemp machines can afford, when flax brings fifteen cents a pound, to give fifteen dollars a ton. Then 15 tons, the produce of 10 acres at \$15 per ton is - - \$225

DEDUCT.

At the same rate, which I paid in cash for like services, but which is done by the farmer, and therefore saved to him, viz :—

Ploughing, sowing and harrowing 10 acres at \$3	-	\$30
Twenty Bushels of clean seed at \$1 50	- - -	30
Pulling and speading at \$3	- - - - -	30
Drying, bundling and carting to the barn, or the machine		
at \$1 50 per acre, \$15	- - - - -	105
		<hr/>
		\$120

In other words \$12 per acre clear profit, and what can a farmer in these times raise to equal this ?

And if he will take his flax to the machine and have it cleaned, and receive only as much as he could get in the old way, after rotting and dressing, he will receive more money.

I have been offered 25 cents per pound for my crop, which will yield me, upon a fair calculation, six thousand dollars.

I will now furnish you with an estimate of the expense and value of the machine, from which you can form an idea whether the patent right for a town or a county is worth purchasing by an enterprising man.

It is estimated two machines will cost, including the machinery to go by horse power, \$1200, and if by water, then about \$1000, and that a horse or a pair of oxen, will drive two machines.

The machine is four feet wide and calculated to dress an ordinary bundle of flax weighing two pounds, at a time, and it will take through *three* lengths of such flax in a minute. That data will furnish a much greater quantity per day, (say ten working hours,) but I have no doubt *each machine* will dress including all interruptions, *one ton* of the plant in a day. Having been obliged very hastily to take down the machine to prevent pirates from robbing us, I did not make an estimate of the yield of the flax in the manner I intend shortly to do. Hemp was tried and yielded thirty-three per cent clean fibre. I adopt therefore in the following estimate the English calculation.

One ton of plant will yield according to Mr. Millington's testimony under oath before a Committee of the British house of Commons, (see Journal of Arts and Sciences, Nos. 8 and 9. p. 32,) at the rate of twenty-five pounds of fibre, fit for the hackle or hatchel, for every hundred pounds of the flax plant.

TWO CALCULATIONS.

1. The product of twenty-five pounds of flax at ten cents, which I think is the very lowest it will ever be sold for.

<i>Two tons</i> , produced by two machines, at the rate of twenty-five pounds for every hundred, is in pounds	-	1000 lbs.
At	- - - - -	10 cts.
Each days earnings of two machines is,	-	\$100,00

DEDUCT.

Suppose you give <i>twenty dollars</i> per. ton for flax plant, say two tons at twenty dollars	
per ton is,	- - - \$40 00
Two men, four boys, and a horse or oxen,	
say	- - - \$5 00
	<hr/> - - 45,00
Net profits per day,	- - - 55 00
Say three hundred working days in the year,	- 3 00
Per Annum,	- - - \$16,500 00
	16,500 per annum.

According to Mr. Millington's estimate in the Journal of Arts and Sciences above referred to, No. 9, 35, nearly two thirds of the fibre is saved by the new process.

2. Suppose you clean flax for the farmers for toll, and give them more than they can get under the old system.

If nearly two thirds is saved by the new system, you can give the farmers one hundred pounds and reserve fifteen pounds out of every hundred pounds of plant for the machine, and two of those machines will dress about as much as an ordinary township will raise, and every additional machine required will be so much the more profit.

Then say, fifteen pounds of clean flax, out of every hundred pounds, in two tons of the plant is, - 600 lbs.
10 cts.

				\$60 00
Deduct expences as above stated	-	-	-	5 00
				\$55 00
Say three hundred working days in the year,	-			300
				\$16,500 00

say 16,500 per annum.

The machine thrashes the seed. In neither of these estimates have I included the tow, nor the benefit of the seed, nor of the boon or woody substance, (see Journal No. 9, p. 34,) which is said to be when unrotted, good food for horses, cattle, &c. I presume you are by this time pretty tired of my long story, but I cannot refrain from stating one occurrence which will speak louder than all the above calculations.

Last spring a wager was laid, as to the weight of a piece of Irish linen, the retail price of which, at the stores in this city, was twenty-five dollars. A piece was obtained and weighed six and a half pounds. Now then suppose ten pounds of flax was used and washed in making this piece of

linen, which at twenty cents per pound would make our farmers soon rich, and would cost two dollars. We pay then twenty-five dollars, to whom and for what? Let every thinking man ponder on this subject, then we shall unite heart and hand to employ our own means. We will retain our money and add to our independence.

I am, Sir, very respectfully,

Yours,

ANTHONY DEY.

Corner of Nassau and Cedar Streets.

S. W. POMEROY, Esq.

Newton, November 28, 1821.

[To the Corresponding Secretary of the Massachusetts Agricultural Society.]

SIR,

ON the 5th day of June, of the present year, I commenced sowing an acre of Carrots on my farm in Newton, and continued until the 9th of the same month, when the sowing was finished. They were sowed in rows, three feet apart. The ground was ploughed and wed twice, between the time the carrots were sowed and the first of August; on the last mentioned day, I set out Ruta Baga plants between the rows of carrots. They were placed eighteen inches apart. Twelve days after the ruta бага plants were set out, they were slightly hoed, and the few weeds which had grown in the rows of carrots, were pulled. About the middle of September the ground was entirely covered with the leaves of the ruta бага and carrots, and remained free from weeds or grass, until the crops were gathered. The land had been planted, a part with potatoes, and a part with corn the year before. Late in the Autumn, it was ploughed into ridges, as is my practice with all land designed for cultivation the next year. The last of May, after the grass and weeds appeared, in a dry

day, the ridges were harrowed down, and a smooth surface was made. Fifteen common loads of barn yard manure was then spread on the land, and immediately covered, by ploughing ridges three feet apart, and as deep as it could be done by two strong horses. By this harrowing and ploughing, under a hot sun, all the first growth of weeds was destroyed. The ground remained in this situation, until the 5th of June, when I was ready to sow the carrots. The ridges were then split with the plough, and thrown back into the furrows, by ploughing as deep as possible with the same team, which formed the rows or ridges on which the carrots were afterwards sowed. I was careful not to form these ridges, faster than the carrots were sowed, that the seed might have the advantage of the freshness and moisture of the earth, when it was first turned up. By this means, the carrots came up in the rows, and could be distinctly seen in the field, before there was any appearance of weeds. When the seed was sowed, there was no manure of any kind put into the rows, and none made use of in any way, excepting what was spread on the land in the first instance, and immediately covered by the plough. The crop was gathered the beginning of November, and the acre yielded, three hundred and thirty three bushels of carrots, and two hundred and eighty-four bushels of ruta бага.

Being of the opinion, that the carrots were too thick on the ridges, the last week in August I commenced pulling, and thinning them for my hogs, and continued it daily, until the last of September. It is impossible for me to say what quantity was taken from the acre during this time, which was about five weeks; it was however sufficient, with only the common waste of the house, to support five large hogs, and fourteen pigs, a part two, and a part three months old. Besides, a considerable quantity was given to the horses and oxen.

They were given to the hogs, &c. without taking off the tops. This was in addition to the quantity above stated.

As it was my intention, to set out the ruta бага between the rows of carrots, I thought it better to spread the manure over the whole of the ground, than to drop it in the furrows, and cover it by turning back the ridges. In that case it would indeed have been directly under the carrots, but the ruta бага would not have had a share of it. Besides, the ground was twice thrown into ridges after the manure was spread, and consequently well mixed with the earth. By this process of ploughing, the ground was loosened, sufficiently deep for the carrots, and at least as well pulverized, as it could be done with a spade. The ridges were made as high as it was possible to make them, at the distance apart which I have mentioned. The higher they were raised, the deeper the ground is loosened, and a large surface is formed for the sun the light rains and dews to act on. If we have a dry season, it is generally, the latter part of summer, when the leaves of the carrots and ruta бага, planted in the manner I have stated entirely cover the ground. There is no doubt but a much larger quantity of carrots might be raised from the same ground, provided there was double the quantity of rows or ridges. In that case the rows would only be eighteen inches apart, and the ground could not be ploughed between the rows. It would be necessary therefore that all the labour should be done with a hoe, and by weeding. Besides, by hoeing and weeding, the ground would not be so well loosened and pulverized, as by the plough.

It may further be observed, if the rows were only eighteen inches apart, the surface of the ground must be flat, (as there would not be room for ridges,) and of course would become harder, and more unfavourable to the growth of carrots; and there would not be so great a surface for the dews, the rains, and the sun to act on, as I before mentioned.

By sowing the carrots in the manner I have stated, the ground can be ploughed as long as it is necessary, before the proper time arrives for planting the ruta бага. This ploughing perfectly prepares the ground for the ruta бага, and all the labour attending the cultivation of this latter plant, is the setting out, and once hoeing.

There is another advantage attending this mode of cultivating the ruta бага, and carrots on the same ground. The leaves of the ruta бага spread to the rows of carrots on each side. In the morning, after plentiful dews, I frequently visited the field, and observed the leaves of the ruta бага covered with water, and the dew drops gently falling on the rows of carrots. I am satisfied the ruta бага did not diminish the quantity of carrots; I left a part of three rows of carrots, in different parts of the field, where I planted no ruta бага; in these rows, the carrots were not larger, and did not produce more than the others. I have not made this communication with a view to a premium from the Society; and consequently have not furnished you with the vouchers, which would be required; my sole object is in the decline of my life, to do all in my power to promote the cause of agriculture, which I consider the basis of the prosperity and happiness of our country.

With the most perfect respect, I am,
your most obedient servant.

WILLIAM HULL.

Newton, November 3, 1821.

[To the Corresponding Secretary of the Massachusetts Agricultural Society.]

SIR,

IN a former communication, I stated the manner in which I cultivated Carrots and Ruta Baga, on the same ground. An objection has been made to the cultivation of ruta бага; that when cows are fed on it, an unpleasant flavour is given to the milk, and consequently to the butter; and likewise

when beef, cattle, sheep, and hogs, are fattened on it, the beef, mutton, and pork will taste of the root.

With respect to the milk and butter, I think the difficulty may easily be removed. For a month past, I have fed my cows freely on ruta бага, and have adopted a practice, which is recommended in Skinner's American Farmer, Vol. 1. p. 60. 'Dissolve two ounces of Salt Peter in a quart of water, and before milking, put two table spoonsfull into the pail, provided the pail is to be filled.' I have fed my cows freely on the ruta бага, for more than a month past, and have adopted this practice; the milk has been entirely free from any disagreeable taste, and the butter of a fine yellow colour, and perfectly sweet. If the remedy, which I have here mentioned, should not in all cases, with respect to milk and butter be effectual; and if it be true that beef, mutton, and pork, will be effected in the manner which has been stated, there are other useful purposes to which it may be applied, without any of the inconveniences, which have been mentioned. The useful purposes, to which I refer, are, in feeding working oxen; young cattle; cows, which do not give milk; horses; and store hogs: all these animals eat this food greedily in a raw state, excepting hogs, and when boiled or steamed, my hogs eat it, with as good a relish, as they do potatoes or carrots, mixed with a very little meal, or soap boilers scraps, prepared in the same manner, as the potatoes and carrots are prepared. I have made an experiment of this kind; I have a pair of young horses, which stand in the same stable, and perform the same labour. One I fed on carrots, the other on ruta бага. They are both in good order and condition, and the one fed on the latter root, is as strong, and in every respect equal to the other. From my practice, and experience, I am satisfied, this is a very nutritious root, and well calculated for the purposes I have mentioned.

I am sensible in recommending to farmers the cultivation of articles, to which they have not been accustomed, there

is a great responsibility. Our soil and climate is well calculated for the production of corn, rye, barley, potatoes, peas, carrots, &c. which the farmers have been in the habit of cultivating. These are valuable articles and afford many comforts.

All at present that I should venture to recommend, is that the ruta бага may be added to these articles. I recommend it, because I am satisfied, from experience, there is nothing which can be cultivated on the same quantity of land, and with the same labour, more valuable. The same acre of land, which will produce forty bushels of corn, with the same manure, will, according to the observations I have made, produce at least five hundred bushels of ruta бага; this is twelve and a half bushels of the latter, for one of the former. After corn is planted, it is the usual practice to plough and hoe it three times. It is liable to be cut down by late frosts in the spring, and injured by early frosts in the Autumn, and the ploughing and hoeing is at the most busy seasons of the year.

I have been in the practice of setting out the plants, instead of sowing the seed in rows. It is not necessary to set them out, until the beginning of August. At this time it is easy to destroy all the weeds, and grass with the plough and harrow.

After plants are set out, it is only necessary to plough and hoe them once. The leaves will soon cover the ground, and prevent the growth of weeds. I think it must clearly appear, that the expence and labour of cultivating an acre of ruta бага, is not by any means as great, as that of an acre of corn. The plant is of an hardy nature, and may be set out in the driest time. The last season, I set out a part of my field, after a rain, when the ground was moist. The other part when it was dry, and under a hot sun. The first did not wither in any degree, but grew immediately; the leaves of the other died, and it appeared to be necessary to set them out again. I however waited a

ew days, and new leaves came out from the roots. The last when the crop was gathered, were full equal to those first planted. It is a root, which delights in a dry, loose soil, as an evidence of it, I set out a few rods of very rich ground, highly manured, with these plants, and in a situation, when I could turn water, through the rows. The tops grew rapidly, they had large long necks, but the bulbs were not as large, as those set between my rows of carrots, on a lighter soil, and which were not watered. One of my neighbours, the present year, planted half an acre on the dryest and poorest part of his farm, with no other manure but pond mud, and had about two hundred and fifty bushels. I mention these circumstances to show, that land which is unfavourable to other vegetables, seems to be favourable to this.

Newton, December 26, 1821.

[To the Corresponding Secretary of the Massachusetts Agricultural Society.]

IN a letter, which I lately addressed to you, I stated the reasons, which then prevented me from communicating a system of irrigation, which I had adopted, and practised on my farm in Newton.

Those reasons were, that a woollen factory on the same stream below, had been established, and that the proprietors contested my right to use the water, in the manner I did for the purpose of irrigating my grounds.

Having since examined the subject with more attention, and obtained the opinion of counsel, in whose judgment, I can place the fullest confidence, I am satisfied there can be no question, with respect to my right.

I shall therefore proceed to state generally the manner, in which I have conducted the operation, the effects it has pro-

duced, and make such general observations, as the experiment has taught me.

A never failing stream, sufficiently large for a corn mill, passes in its natural course, through the easterly part of my farm, about the distance of forty rods. On the easterly side of the stream, are about six acres of land. On the westerly side, is a plain of about sixty acres from which the farm rises into hills.

Nearly where the stream first enters my land. I have repaired an ancient dam, by which the water is raised about ten feet higher than the highest part of the plain, I have mentioned. From this pond, or reservoir, I have opened a small ditch, on the east side, by which I irrigate the principal part of the land, on that side of the stream. Here is a gentle declivity, and the ditch is carried nearly as high, as the surface of the reservoir.

The great object in raising the water, was to spread it over the sixty acres laying on the west side of the stream. For this purpose, I dug a channel, about eight feet wide, from the reservoir, over the highest part of this ground, winding, and circuitous, in its course.

This channel terminates, and discharges all the surplus water, into the original channel of the stream, before it leaves my land. I found it impossible to make this main channel on ground of the same elevation. To carry the water on the highest part of this plain, I was obliged to raise the banks, in some places, as much as three or four feet. From this main channel, are a number of outlets, all made on the highest ground. At these out-lets, I have no regular gates, but make use of large, tough sods, to stop, or let out the water, as occasion may require. From these out-lets, the water runs into small ditches, made only by ploughing a furrow, observing the same rule, with these small ditches, as in the main channel, to make them on the highest part of the ground, intended to be irrigated. I think it better to make use of these sods at the out-lets, because it is attended

with much less expense than gates ; and because if they are on the land, they ought to be dug up, and when they decay, they become good manure, and may be replaced by others. On ground nearly on a level, it is difficult to have too many of these small ditches. They are formed, with very trifling labour, with the plough, and the water will run from one to another, which will prevent it remaining stagnant on the grass. In this way, there is as great, and perhaps a greater advantage in irrigating ground nearly on a level, than where there is a declivity. The manure is not so liable to be washed away, and the numerous ditches, occasion no loss of land. Before the time for mowing, these ditches will be entirely covered with the most luxuriant grass, and from my observation, a larger quantity grows on the same space, near them than at a distance from them.

In this manner, the water can be spread, as occasion may require, over the whole of the field. It would be an injury, instead of a benefit, should it remain constantly on any part of the ground. To change it, nothing more is necessary, than to put down the sods, at the out-let, or out-lets, where it has been running and take them up at other places, where the water is most wanted.

Where the water first enters the main channel, from the reservoir, I have a gate, by which at any moment, I can stop the whole or any part of the water, and leave the ground irrigated perfectly dry. The main channel has a circuitous direction around my house, which affords a convenience for baths, watering my cattle, and all family purposes. During the course of three or four years, the whole of the labour, in forming these water courses has been done by the common labourers on my farm, and at times, when it could best be spared from other necessary business.

Until the last year, I avoided irrigation in the winter, I did it, in conformity to the opinions of the best writers, I had examined on the subject. Observing on the different parts of my farm, where springs, and small streams run over the

land at that season, the grass was much earlier, and continued to grow more luxuriantly. I was induced to try the experiment, and spread the water over the dry land during the whole of the winter. I am so far satisfied of the utility of it, that I shall continue the practice ; besides that water in winter is warmer than the atmosphere, a large quantity of rich sediment is carried on the land. Indeed, I am of the opinion it may be made useful at all times under proper management. This opinion however ought to be qualified, by observing, that different soils may require a different practice. If the ground is of such a nature, that it heaves by the frost, in such a manner that the water will not run over its surface, it will do an injury instead of a benefit. As I before observed, it is impossible on this subject to lay down any general principles, which will apply in all cases.

No general plan can be pointed out, without some exceptions ; very much will depend on the situation of the ground, and other circumstances. Near the reservoir of water, where the dam is erected, should be a gate in the main channel, where all the water can be stopped, and turned down the original channel of the stream, and prevent any from running in the artificial water courses, and spreading over the land. There are times when it will be injurious, even on dry land. In hot days, when the sun is intense, the water should be entirely taken from the land, the night, and cloudy and rainy weather, are the most favourable seasons. Water is not only injurious to stand long on the surface of land, especially in hot weather ; but it is equally injurious at all times, to remain stagnant, under the surface. This can only be prevented by drains, on which subject it is my intention at some future day to make a communication.

Among the best writers on the subject of irrigation, there are various opinions with respect to the most suitable seasons of the year for the purpose.

There is no doubt, but the spring and autumn, when the rains are heavy, are very favourable. One great advantage,

and perhaps the greatest, arises from the rich sediment, which the water carries on the land. From the experiments I have made, I am satisfied there is no mode of cultivating and fertilizing land, with so little expense, and so profitably, as by irrigation.

It is however to be observed, that however valuable water is to land, when properly made use of, there is nothing more injurious to it, frequently, when left to its natural course, or when injudiciously managed. It is necessary to have the entire command of the water made use of for irrigation. The least observation will be sufficient to shew, that large quantities of our best land are rendered useless by water. It is in nature, that all streams seek for the lowest grounds. These grounds are covered by the water, where it remains stagnant, and every kind of vegetation is destroyed. Two important advantages are gained by a proper mode of irrigation; one, the water is carried on the high and dry grounds, with all its enriching qualities. The other, the low grounds are left dry, and in a situation to be cultivated and become abundantly productive.

It will be seen by the plan I have adopted, the first thing is, to erect a dam, in some suitable situation, to raise the water, and form a reservoir, higher than the ground to be irrigated; no regard ought to be paid to straight lines in forming the channels; it is better, they should be winding and circuitous, and it is all-important, their courses should be on the highest ground intended to be irrigated. The out-lets, from the main channel, and small ditches, ought to be numerous, and it is necessary to exercise the best judgment in forming them.

It is in this case as in all others which relate to agriculture, very much will depend on the sound judgment of the person who manages the farm. There is another advantage I have experienced, since I commenced the system of irrigation; heretofore, after mowing my grass, I could not walk over the ground, without a swarm of Grasshoppers, and other insects flying up before me. They have now disappeared, and I

know of no other cause, than that they have been destroyed by the water.

Those fields which were dry, and without hardly a blade of green grass, after the first mowing, are now at that season covered with the richest verdure. Such parts of my mowing grounds, as I have irrigated, without carrying on any manure, excepting what was carried on by the water, have greatly increased, both in the quantity and quality of the hay : and according to my best opinion, there will be no occasion of breaking up the land, as long as the operation of the water is continued. Some parts of the land, which I irrigate, I have manured, and have found myself amply remunerated. The coarsest and rawest manure, retaining all its strength, may be put on these lands, in the fall, early in the spring, or after the first mowing and the water not only prevents it from burning the grass, but decomposes it in such a manner, that it has a greater effect, than when it is old, and some of its virtues have evaporated, as will be the case when exposed to the sun, and the air in its preparation. When history informs us of the great advantages, which the earliest nations of which we have any account derived from fertilizing their lands by water ; when it is considered in what high estimation, it is held in every part of Europe, and indeed in other parts of the world ; and from the few experiments which have been made in this country, what vast advantages might be derived from it, is it not matter of surprize, that more attention has not been paid to it here, and that it has hitherto remained without any patronage ? In Switzerland, the first agricultural society grants it the first premium. I believe, there is no country on earth, better calculated for improvements, by this means, than ours. Streams almost innumerable pass over it, in their natural courses, and have carried and continue to carry, the richest part of the soil into the ocean. This rich manure, which is now entirely lost, with little expense, and without the aid and labour of dung carts, might by spread over our cultivated fields, and render them

productive, beyond any calculation that the most sanguine can imagine. Yet we stand, uninterested on their banks, gaze at them as they pass, without an effort to regulate their courses in such a manner, as to reap the advantages of the rich treasures, they contain. It is certainly a neglect of a blessing, which a munificent Providence has provided and offered for our acceptance. If the account I have here given, and the observations I have made, can be of any use, I shall be happy. In any event, I am satisfied, the experiment, I have made, has been attended with great advantages to the farm I cultivate. In four years, my crop of hay has increased more than ten fold, and this has been effected principally by irrigation. I am with highest respect, your most obedient servant.

WILLIAM HULL.

ON THE MOST SUITABLE SEASON OF THE YEAR FOR THE CUTTING OF TIMBER, WITH REFERENCE TO ITS DURABILITY.

IT would seem surprizing, that a question so easily decided by a few experiments, should in this age be still a subject of dispute. Yet so it is, and although a careful collection of facts, one would suppose, would readily settle the dispute, (for upon such a subject above all others, *facts* alone must be resorted to in preference to *theory*.) yet it is true, that in this age, in which science has attained to a higher degree of certainty and perfection than in any former one, this most interesting question remains the subject of conflicting and opposite opinions both in Europe and America. The vast importance of it connected as it is with the durability of our houses, and utensils of wood, and the still if possible more important question of the durability of our ships, one would have hoped would have led philosophers to ascertain by unquestionable experiments the true principles, and to put the question at rest.

Commodore Porter has published a very elaborate essay on this subject, and Col. Pickering has with great ingenuity and characteristic frankness, replied to the Commodore, and collected a great mass of facts on the subject, which appear to us not only to impugn the opinions advanced by Commodore Porter, but to settle the question in the minds of every man, who is acquainted with the habitual caution and exactitude of Col. Pickering in relation to questions of this sort.

It had been our intention to introduce both Commodore Porter's and Colonel Pickering's views of this subject in the present number of our Journal, but the space necessarily occupied by the official accounts of the proceedings of this society, would not permit us to accomplish what we had proposed.

It may be thought by some persons, that we had better curtail our accounts of our shows and of our premiums, and give place to original communications on such interesting topics.

It should however be recollected, that, *after all*, the interests of agriculture and of our country are best promoted by diffusing through the whole mass of the people a taste and zeal for the promotion of agriculture generally, rather than to confine their attention to the speculative examination of any one point however interesting it may be. The question above referred to, though highly important, seems rather to be more calculated for a philosophical or scientific journal, than for one purely agricultural. It seems to us to be of greater importance to show, that while Dr. Deane, thirty years since, spoke of 100 bushels of potatoes as the average crop, on indifferent soils and under ordinary culture, and mentioned 300 and even 400 bushels on an acre with an air of surprise as the product of the best Irish culture of that plant, we are enabled to prove, that not one only, but many of our farmers are able by the recent spirit infused into the agricultural classes of society, to produce from 400 to 500 bushels of that root per acre—and that this has been done not by amateur cultivators of fortune, regardless of the cost, but that the natural

and common tillers of the soil have out-stripped those who regarded not expense in the attainment of their ends. The same remarks apply with still greater force to the other articles of root culture, and it is now seen that the Essex and Worcester farmers take the lead in the culture of the carrot, the Mangel Wurtzel and the Ruta Baga.

No man can doubt that considered in relation to *agriculture only*, these proofs of success in that art should have the preference, to the disputed, though highly important question as to the best time of cutting timber. But though we contend for this opinion, we are by no means of the sentiment that the other should be neglected, and therefore while we regret that the limits of this number will not permit us to give at large as we intend to do, the arguments of Commodore Porter and Colonel Pickering on the best time of cutting timber with reference to its durability, yet we with pleasure devote the small space left to us to the following interesting letter from Mr. Poor, on the same subject, and fully supporting the hypothesis, and corresponding with the facts advanced by Colonel Pickering.

Newburyport, July 31, 1821.

GORHAM PARSONS, ESQ.

DEAR SIR,

I HEARD you observe the other day, that every kind of information which would in any measure serve to advance the agricultural interest of the country, should be made public, and every friend to agriculture, should do all in his power to have it generally diffused. It has since occurred to me, that the following facts may be of some service. If you are of that opinion, you are at liberty to communicate them in that manner you may think proper.

The following are the facts alluded to, and are within my

own knowledge and observation, viz :—In the fall of 1812, my grandfather (then ninety-one years old) in conversation with a respectable mechanic on the subject of the durability of timber, urged with much earnestness, the great importance of cutting or felling the trees in the old of the moon in the month of March, the mechanic with as much earnestness, but with great respect to the old gentleman, insisted that the month of June was the best month, that timber cut at that time and well seasoned, was worth double that in March ; it was to be sure much harder to work, but would endure longer and for any use on a farm, particularly ploughs, carts, harrows, drags, &c. it was incomparably better, and he further observed that he was once of grandfather's opinion, not from his having made any actual experiment, but from having been told from his youth, that March was the proper month for felling timber trees, that from accident he at first had an opportunity of testing the difference, and on further attention to the subject, he was fully confirmed in his opinion. My grandfather still adhered to his opinion, but was desirous of making an experiment by selecting two white oak trees, size, situation, general appearance as to age and health, and the soil, as near alike as possible, that was done at the time (the fall of 1812.) In the month of March following, in the old of the moon one tree was cut, the timber carried to the mill and sawn into suitable timber and scantling for an ox cart, and put up to season in the open air, the middle of June, the other tree was cut, carried to mill, and sawed into timber, &c. suitable for an ox waggon, and put up in the open air to season, and treated in every respect as that cut in March. In the fall of the year, both parcels of timber were housed, and in the spring following, an ox cart was made from one, and an ox waggon from the other parcel, both painted and the work alike in all respects. They were used principally for hauling stone, and if there was any difference in the service to which they were used, it was that the June timber had the hardest, they were both housed in winter, and commonly

remained out in summer. At this time the one made of timber cut in March, is very much decayed, the raves defective, much bruised, and a general appearance of decay and of being much the worse for wear, while that made of timber cut in June, is perfectly sound, and has not given way or started in the joints, or in any respect appears half as much worn as the other, although as before observed it has been put to harder service, and it is a fact that in this instance the June timber is very much harder, and is not so much bruised as that cut in March. I send you a piece of plank from each parcel, and you will at once perceive that a striking difference is in favour of that cut in June; the mechanic who induced this experiment, says timber cut in June, must be sawn soon after 'tis cut, and near the size in which it is to be used, for it is much more difficult to work than timber cut in March, but it will not powder-post or crack in the sun; he is also of opinion that it would be far more durable as ship timber, but this experiment goes only to prove its superiority for farm use, and I am fully satisfied that it will be for the interest of farmers to use for their carts, waggons, &c. timber cut in June, in preference to that cut at an earlier period. I should like to know, why June is the best time, and how it happens, that even accident should not have done away the long established opinion, that timber to endure and be serviceable, must be cut in March. Should the preceding facts be acceptable my object is obtained.

And I remain your obedient servant.

BENJAMIN POOR.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN,

HAVING viewed with pleasure, the laudable exertions of your Society for the improvement of agriculture and manufactures. I entertain a disposition to contribute my mite,

to the promotion of this benevolent and useful design. What I design at present is, an essay upon the culture of the Silkworm, and an exhibition of its effects for several years, in my family.

I was induced to undertake the cultivation of Silk, from the well known utility of this article, in a great part of our clothing, and almost all the ornamental parts of dress.

About five years ago, I began the cultivation of the Silkworm, having previously prepared a good supply of white Mulberry trees, the leaves of which are the only support to this animal, with any kind of profit.

It is true that the life of the Silkworm may be preserved for a few days by some other vegetables than the Mulberry, as lettuce, and leaves of the low brian berry, but nothing else than white Mulberry will produce silk to advantage, even the black Mulberry not excepted.

The average quantity of sewing silk and twist, annually manufactured at my house, is about one thousand skeins, sometimes more, and often less; and the quantity might be increased almost to any amount if consistent with other pursuits. It might be profitable economy to large families who expect to labour for their support, and whose landed property is small; for I have no doubt that one acre of land well covered with Mulberry trees, would support Silkworms sufficient to produce six or seven hundred dollars worth of sewing silk annually. And the Mulberry will flourish well upon any land that is suitable for the apple tree; and I believe as well in this as any other country.

The proper time for hatching the Silkworm, is about the 10th of June in common seasons, and it continues to feed upon the Mulberry leaves about five weeks. Then it withdraws and winds itself within a very beautiful ball, where it continues about nine or ten days in a dormant condition. Then, if it be not destroyed for the sake of its silk, it eats through the ball, and appears in the form of a large white miller. This is the state of perfection to the Silkworm. In this, it propa-

gates its species, prepares for a numerous posterity, and then it languishes and dies.

I have sent you a specimen of our silk and twist, together with a pair of gloves for your inspection, and hope it will meet your approbation. The manufacture of silk in this country, may be greatly to the advantage of it, by affording employment to children and other cheap hands, and thereby prevent the exportation of its specie. Therefore, would it not be advisable to give encouragement to this kind of domestic manufacture ?

The pursuits of agriculture and manufactures are evidently progressing, through the aid of your society, and others of the same description ; and there is no doubt, your satisfaction will be in proportion with your endeavours to promote the prosperity of your country.

And I would just observe, that the whole of our silk has always been manufactured at my house in every operation, and the colouring thereof. The natural colour of silk is white.

From your friend,

And humble servant,

REUBEN HOLCOMB.

Sterling, County of Worcester, October 4th, 1821.

[The following letter from the Hon. John Welles to the Corresponding Secretary, on Forest Trees, relates to a subject of the greatest importance to the State of Massachusetts, a State destined to become very populous by its industry, its capital, and its superior advantages of all descriptions for extensive manufactures. The best mode of preserving our wood-lots from decay, can be ascertained only by extensive and frequently repeated experiments. No man in New England has enjoyed greater opportunities than Mr. Welles, of making and witnessing such experiments.]

I some time since, in a communication to the Agricultural Society, made some observations upon the growth and culture of the apple tree. (No. 1. Vol. 6.) with a view of stating from experiment how the natural disadvantages of soil might be counteracted.

It is now my intention to resume the subject, for the purpose of leading to a more general enquiry as to the laws which govern and regulate vegetable life, as well in that majestic production of nature, the Forest Tree, as in the fruit-bearing tribes.

How then amongst us is vegetable life affected by climate? How, by other causes? and what is the duration of the several kinds of Trees?

That these questions may be rightly answered, known facts are to be collected from the observing; and such results must be obtained as may lead to the most accurate decision of which the subject is susceptible. Thus, whilst in this great process of nature, general knowledge is enlarged, it becomes the immediate source of practical utility. Or in other words, experience, gathering strength as time passes by, becomes our unerring guide. Much has already been done by the publication of extracts from Michaux, relating to the varieties in the American forest. But if with a like zeal we can obtain from others of the present time, whose information is competent, known facts as to the age of trees; there is no doubt sufficient knowledge might be had, to establish a general system accurate enough for every wished for purpose.

And why should not the laws which influence vegetables, be as definite as those which govern animal life? What one generation cannot do, let two effect. And as to exceptions, let it be remembered, that they do not disprove but establish general laws.

A time will come (especially if coal is not found more abundantly with us) when from the increase of our population and our manufactures, the cutting off and the re-growth of our forests, or to use a more appropriate term, our woodlots, will form an important subject of calculation. It will be desirable to estimate with precision, at what period the earth will again present a renewed growth; as well as the most beneficial time and mode of using the axe. Some in-

deed may be so favoured with length of days as to avail themselves of this labour of the earth more than once. But if not, to their successors and to the community, the subject is highly important and replete with interest. The diversity of opinion on these topics, and the occasional and scattered instances of the great longevity of trees, while they render the subject more intricate, make it also more essential as a topic of enquiry. These variations from the general law in this country, as well as other similar ones in past ages and in the present times, should form no impediment to the *general rule*.

As relates to our forests or wood land, it is a fact generally known, that where they are cut off and a renewed growth is wished for, if they are of hard wood, they should be cut when the sap is down, or the leaf off the tree. This being mostly in the winter season, is most convenient to our husbandmen. It is considered as very essential by European writers as well as some of our own country, that trees should be cut as near the ground as possible, as a means of throwing back the suckers more toward the roots. This practice is dictated also by economy as a saving of the best part of the wood and timber. In the publications of the Scotch Agricultural Board, by Sir John Sinclair, it is observed, 'that of the trees which being cut down send forth no shoots, are the beech and the whole family of the pines.' They are considered in Europe 'as limited to one generation.' There is a mode here, however, as to the latter tree which has the effect of producing a succession. After cutting off a pine lot, the plough is introduced, a crop of rye is obtained beneficially, and the seeds of the pine which were on the surface being thus buried in the soil, a new and rapid growth is produced. This is aided if one or two middle sized seed-bearing trees are left on an acre. It is said that in some parts of our country there is a change or a succession of different growths, even of different genera or families. Upon this seeming incongruity I cannot reason, from want of experience.

As to the important principle, at what age or how often it is best to cut off our wood, we should on the whole be disposed to name a period between 40 and 50 years, as most favourable for what is termed hard-wood trees. The writer here refers not only to a variety of facts as to lots in different parts of this state, but to opinions of many judicious farmers. This is corroborated by a number of experiments, where portions of a lot have been cut off at the period of time above stated, and the product of which considerably exceeded that of other parts of the same lots, which had been left standing, in the aggregate quantity upon an acre. This was the more discernable where the ground had been cut clean; a practice which cannot be too highly recommended.

By the agricultural reports before alluded to, it appears that in the lots reserved for wood (called coppices) it is considered as most profitable to cut off the growth every 40 years. It will be perceived that for this country a longer period is inclined to.

As to the pine, that called the pitch pine, (*Pinus Rigida*), is the prevailing growth in this State. The general opinion is that it may be cut to advantage once in about 40 years.

Though trees may shoot up in height by standing longer, yet the period of most rapid vegetation is mostly over, and by this means much of the under growth is necessarily destroyed.

It may be here remarked, that those trees which took their start in the earlier stages of vegetation on our soil, and have grown separate, have put at a distance all competition. Having the advantage of extent of ground, air, light, &c. besides being more valuable as timber, they have attained greater age and size than has been since known.

One observation will tend to the vindication of our country from that censure, which has been bestowed upon us by some superficial travellers. We have been condemned as evincing a want of taste in cutting off our forests without leaving what it would take a half century to produce, a shade

near where it is proposed to erect buildings. The fact is, that trees of original growth have their roots mostly in the upper stratum of earth and near the surface. A tree acts upon its roots, and is acted upon by the wind, sustaining in common with the whole forest the force of this element, and it becomes accommodated or naturalized to the pressure. But when left alone or unsustained, it is borne down by the first gale, often to the injury of property, and even of life. It is true wisdom therefore, that induces the settler to cut or girdle the whole growth, that a danger so serious may be avoided.

Considering the oak as the monarch of the wood, we begin where this tree predominates. From a careful examination of several lots of considerable extent, which have been cut clean, and where there could be little doubt that the growth was, as it were, primeval; not more than seventy rings could be discovered. As the outer rings were not very distinct, it may be fairly inferred, that many years might have passed by without this indication of increase. The result seems sufficient, more especially if it shall be confirmed by coincident facts, to establish the preceding hypothesis; that it is generally most beneficial to cut off our wood lots at some period between forty and fifty years; varying the rule somewhat as circumstances may dictate.

Where lots are left for a much longer period, or where the old trees are gradually selected as wanted by the proprietor, the growth becomes more and more feeble.

The English writers generally lay down a different result from what appears to be the fact in this country as to the growth of wood.

First they assert, that after a period of about fifty years the forest trees will not shoot anew after being cut over. This is so far from being the case here, that it is believed that scarce an instance has occurred, where lots are fenced and cattle are kept out, but that a new growth has rewarded the owner of the soil. In several lots of old growth upon Blue

Hill in Milton, it was predicted that there would not be a new growth. The wood was cut off in about 1800, and there is now a fine vigorous succession of the same sort of trees.

Old lots, when the wood is taken therefrom, are too often left exposed as pastures or in commons; the roots are surcharged with sap; the shoots, when they rise up, are of rapid growth, tender, and nutritive; they are cropped by cattle and sheep, and the erroneous conclusion above stated is too hastily drawn, in this country at least. The next point, upon which we must dissent, is this. That 'the trimming of wood lots is beneficial.' True it is, that some of our farmers think that the stumps of their trees may be deprived of a portion of their numerous suckers for a few years. They are used to serve as hoop poles. Perhaps from the necessity of the case, and the situation of the country, this may be justified. But experience here seems fully to establish it, that wood lots should not be trimmed in the manner recommended by the English writers, for the purpose of letting in the air and light. In a variety of instances where this has been done, the consequence has been that the leaves have been blown away, which would have made the land lie light and nourish the roots. A thick grass sward has been formed, and the lots have been stunted in growth, and most essentially injured.

There is no doubt that in the family of the oaks there is a great difference in growth and duration. The red oak, (*Quercus Rubra*); the grey oak (*Quercus Ambigua*); the swamp white oak (*Quercus Prinus Discolor*); in forests attain their growth sooner than the white oak (*Quercus Alba*). The latter tree spreads its limbs parallel nearly with the earth by engrossing a greater extent of soil; it has the benefit of better nutrition. As it seldom predominates in the forest in close growth, it does not perhaps mature much under from 60 to 80 years, and when in single and favourable situations, it requires a much longer period. The Chesnut of the United States, (*Castanea Vesca*) is a long lived tree, but less so

than the white oak ; it grows to a large size and is valuable for timber. In Scotland, they conjecture some of their Chesnut trees to be nearly 300 years old. As has been before observed, the white oak and the elm, in common with all other trees when well situated in cultivated grounds, and near roads and houses, attain great and protracted age, and must be considered as forming (if not exceptions) classes of cases by themselves, not interfering with that system under which we place our forests and wood lots. I feel that I owe an apology to you sir, as well as your readers for the length of this communication. My object has been to excite an attention, which is becoming more and more important as to our wood lots, and I feel desirous of bringing those forward who are better informed. As it may furnish, however, some amusement to the curious, and lead to the general benefit and ornament of the country to adorn our highways and pleasure grounds with trees in rows and otherwise, I shall subjoin a *variety of instances of the size, age, &c. of several in this neighbourhood and elsewhere, which will serve to show what an astonishing increase time insensibly effects in this wonderful product of the earth.

I am Sir, respectfully yours, &c.

JOHN WELLES.

Dorchester, October 31, 1821.

AGRICULTURAL INTELLIGENCE.

THE following letter from a very intelligent and highly respectable cultivator of Maryland, expresses a sentiment, which we have often endeavoured to impress in our Journal ; to wit, the great importance of having a common language in agriculture as well as in every thing else. There is nothing so unsettled as the familiar names of grasses and

* This Appendix was necessarily omitted, but will appear in our next number.

fruit trees, and indeed of the varieties of the potatoe, and many other cultivated articles.

We do not agree with Mr. Forman, that in Europe there is more of this confusion of names. So far from it, the men of education all understand each other when speaking of grasses or fruit trees. The only perfect mode of ascertaining precisely, whether we do agree in our application of names, is the one which Mr. Forman has wisely adopted, that of sending, reciprocally, specimens of the plants, together with the name, or names, if more than one, by which they are known in our vicinity. We have no hesitation in saying that one of the plants sent on by Mr. Forman was the *phleum pratense* of botanists, known also by the names of meadow catstail, according to Nicholson's Farmers Assistant, Timothy Grass, Herds Grass, Foxtail. With us it is called Herds Grass, in England Timothy, in the middle states Timothy. Col. Pickering was perfectly correct therefore in giving the synonyme of Timothy to the *Phleum pratense*.

The other specimen which we saw was the *Poa Pratensis* of botanists, so known from Sweden to Spain, and from Maine to Carolina. Its most usual vulgar name *here* is 'Red top'; a natural allusion to the colour of its heads before flowering. We have heard it called also Rhode Island grass. Mr. Forman's communication first informed us, that it ever had obtained the name of *Herds grass*, to which it has not the most distant resemblance. We would observe, that the application of these names in New-England, to those two grasses, is of very ancient date, having been published with us more than half a century since, and so far as we know they have been uniformly so applied ever since.

Another of the grasses sent by Mr. Forman was the *Avena Elatior*, 'tall meadow oat grass,' 'tall oat grass,' in Farmer's Assistant, 'oat grass,' 'wild oat,' and Nicholson says sometimes called 'orchard grass,' which it very little resembles, and which is as well known in both Great Britain and

America, (though not much cultivated in either,) as any grass whatever.

The fourth grass sent by Mr. Forman is the *Dactylis Glomerata* of botanists, properly 'orchard grass' of England and America, or 'Cocks foot,' as some have it. We think it would be more convenient to unite in calling it 'orchard grass,' as its English title. Sir Humphrey Davy's *Agricultural Chemistry*, and Mr. Muhlenberg, will enable us to understand one another when we speak of *Dactylis Glomerata*; but 'Orchard grass,' would be more convenient as a common name. It probably derived this familiar name from its being fond of the shade of trees, often found in orchards and thriving better in such situations, *not than it does elsewhere*, but better than almost any other grass would. We have ourselves some hundred tufts of this grass which thrive and flower annually under the *Tilia Europæa*, a European lime tree, which has the densest foliage of any tree we have, and which have flourished there for thirty years past, while no other plant except the mosses has been able to sustain itself under such disadvantages.

Rose Hill, August 3, 1821.

[To John Prince, Esq. one of the Trustees the Massachusetts Agricultural Society.]

SIR,

IN this package you will find some varieties of our cultivated meadow grass. I am influenced by the strange confusion respecting their names, and my attention has been more closely drawn to the subject by the remarks of Mr. Pickering, who confounds the herds and timothy.

In Europe, the boasting Europe, we are not surprized to learn that in adjoining towns and counties, the most common vegetables are recognized by different names, but in

this country, we have not, and I devoutly pray we never may have any thing like provincialism, in language or habits.

The seeds and specimens are perfect, being all gathered by myself, and I beg of you that you will exercise your industry to give to the public through the medium of your valuable repository, not only a botanical description, but the true *vulgar* names of these grasses. I am,

Your obedient servant,

T. M. FORMAN.

WILLIAM LITTLE Esq. of Boston, presented to the Trustees of this Society a quantity of wheat sent out for this purpose by the American consul at Leghorn, being the sort of wheat, the straw of which is used in making the Leghorn bounnets. This wheat was last spring distributed throughout the State with the request that those who should try it would state to us their success.

Of all the persons to whom it was sent, only two have given any reply; and these accounts are so flattering as to give us strong reason to believe, that it will succeed better than almost any other species of wheat. Whether the straw will be as fine and as clean as the Italian is yet to be decided.

Dr. James Thaxter of Plymouth appears to have managed it with great skill, and obtained from less than a pint, sixteen quarts and three fourths of large grained wheat; being more than thirty-three for one. The upper joint of the straw is much larger, the Doctor remarks. Robert L. McLellan Esq. of Colrain, has also made a return of his experiment, he sowed only three gills, and its produce was at the rate of thirty bushels to the acre. He remarks that the straw was stronger than that of common wheat, and as he thinks twice as strong.

WE cordially recommend to the notice of intelligent cultivators 'the American Farmer,' edited by John S. Skinner,

Esq. at Baltimore. It is conducted with great industry, skill, judgment and impartiality ; and from the central situation of the Editor, possesses great advantages, as to information, which few or no other periodical works, could enjoy.

If we have hitherto abstained from what we consider a notice justly *due* to this work, it has arisen from a principle which we have always prescribed to ourselves, to wait till experience should convince us that a publication was truly worthy of the patronage of our subscribers and members, before we should venture to recommend it.

WE are happy to hear that Messrs. WELLS & LILLY are about to publish a new edition of Dr. Deane's New-England Farmer, with important corrections and additions, to adapt it to the present state of agricultural knowledge. No work on this subject with which we are acquainted, has been arranged in a more convenient form as a manual for farmers. Dr. Deane's Dictionary was truly respectable for the period in which it appeared, and has always been deservedly popular in New-England. We have no doubt from the measures taken by Messrs. WELLS & LILLY, that it will issue in a very improved state, and prove highly useful at this time, when the attention of our farmers is so earnestly drawn to this subject.

CATTLE SHOW, EXHIBITION OF MANUFACTURES, &c. &c.

THE Trustees of the Massachusetts Society for the Promotion of Agriculture, encouraged by the patronage of the Legislature of this State, intend to offer in Premiums, not only the sum granted by the Government for that purpose, but also the whole amount of the income of their own funds. They, therefore, announce to the public, their wish to have

a Cattle Show, and Exhibition of Manufactures, &c. &c. at Brighton, on *Wednesday and Thursday, the 9th and 10th of October, 1822*, to begin at 9 o'clock of each day, and they offer the following Premiums :—

FOR STOCK.

For the best Bull, raised in Massachusetts, above one year old,	- - - - -	\$30
For the next best do. do.	- - - - -	20
For the best Bull Calf, from five to twelve months old,	- - - - -	15
For the next best do. do.	- - - - -	3
For the best Cow, not less than three years old,	- - - - -	30
For the next best do. do.	- - - - -	20
For the next best do. do.	- - - - -	15
For the best Heifer, from one to three years old, with or without calf,	- - - - -	15
For the next best do. do.	- - - - -	10
For the best Ox, fitted for slaughter, regard to be had to the mode and expense of fattening,	- - - - -	40
For the next best do. do.	- - - - -	30
For the next best do. do.	- - - - -	20
For the best pair of Working Cattle,	- - - - -	30
For the next best do. do.	- - - - -	25
For the next best do. do.	- - - - -	20
For the next best do. do.	- - - - -	15
For the next best do. do.	- - - - -	10
For the best pair of Spayed Heifers, not less than one year old,	- - - - -	25
For the best Spayed Sows, not less than four in number, and not less than five months old,	- - - - -	20
The claimant to be entitled to either of these two last premiums, must state the mode of operation and treatment, in a manner satisfactory to the Trustees.		
For the best Merino Wethers, not less than six in number, having respect to form and fleece,	- - - - -	\$20

For the next best do. do. do.	-	-	-	10
For the best native Wethers, not less than six in number, do.	-	-	-	10
For the next best do. do. do.	-	-	-	5
For the best Merino Ram, do.	-	-	-	15
For the next best do.	-	-	-	10
For the best Merino Ewes, not less than five in number, do.	-	-	-	20
For the next best do. do. do.	-	-	-	10
For the best Boar, not exceeding two years old, do.				10
For the next best do. do. do.	-	-	-	5
For the best Sow,	-	-	-	10
For the next best do.	-	-	-	5
For the best Pigs, not less than two in number, nor less than four months old, nor more than eight,				10
For the next best do. do.	-	-	-	5

None of the above animals will be entitled to premiums, unless they are *wholly bred* in the State of Massachusetts.

For the best Ram which shall be imported into this state, after this advertisement, and before the 15th day of October next, of the improved Leicester breed of long woolled sheep, or of the best Dishley breed, or of the fine, and long woolled sheep of the Netherlands the length and fineness of whose wool shall be found superior to those of our present breeds, \$50, or a gold medal of that value, at the option of the importer.

For the next best do. do.	-	-	-	40
For the best Ewe, of any of the said breeds imported under the same terms, and of the like superior qualities,	-	-	-	40
For the next best do. do.	-	-	-	30

No animal, for which to any owner one premium shall have been awarded, shall be considered a subject for any future premium of the Society, except it be for an entirely distinct premium or for qualities different from those for which the former premium was awarded.

Any of the above Stock, when raised and still owned at the time of the exhibition, by the person who raised them,

will entitle the claimant to an allowance of ten per cent. in addition. But Sheep, to be entitled to any of the above premiums, must be raised by the person entering them.

FOR AGRICULTURAL EXPERIMENTS.

To the person who shall raise the greatest quantity of Indian Corn on an acre, not less than seventy bushels	\$30
To the person who shall make the most satisfactory experiment, to ascertain the best mode of raising Indian Corn, in hills, in rows, or in ridges; not less than half an acre being employed in each mode, in the same field, the quantity and quality both of land and manure to be equal and uniform in each mode; all to receive a cultivation requisite to produce a good crop,	30
To the person who shall raise the greatest quantity of Carrots on an acre, not less than six hundred bushels,	20
To the person who shall raise the greatest quantity of Potatoes on an acre, not less than five hundred bushels,	20
To the person who shall raise the greatest quantity of Parsnips on an acre, not less than four hundred bushels,	20
To the person who shall raise the greatest quantity of common beets on an acre, not less than six hundred bushels,	20
To the person who shall raise the greatest quantity of Mangel Wurtzel on an acre, not less than six hundred bushels,	20
To the person who shall raise the greatest quantity of Ruta Baga on an acre, not less than six hundred bushels,	20
To the person who shall raise the greatest quantity of common Turnips on an acre, not less than six hundred bushels,	20
To the person who shall raise the greatest quantity	

of common Turnips after any other crop in the same season, being not less than four hundred and fifty bushels,	- - - - -	20
To the person who shall raise the greatest quantity of Onions on an acre, not less than six hundred bushels,	- - - - -	20
To the person who shall raise the greatest quantity of Cabbages on an acre, not less than twenty-five tons weight,	- - - - -	20
To the person who shall introduce any Grass, not before cultivated in this State, and prove, by actual experiment, and produce satisfactory evidence of its superiority in any one quality, to any now cultivated,	- - - - -	30
To the person who shall give satisfactory evidence on 'Soiling Cattle,' not less than six in number, and through the whole season, together with a particular account of the food given, and how cultivated,		30
To the person who shall make the experiment of turning in green crops as a manure, on a tract not less than one acre, and prove its utility and cheapness, giving a particular account of the process and its result,	- - - - -	30
To the person who shall, by actual experiment, prove the best season and modes of laying down lands to grass, whether spring, summer, or fall seeding be preferable, and with or without grain on different soils,	- - - - -	30
To the person who shall raise the greatest quantity of dry Peas, on an acre, not less than thirty bushels,	- - - - -	20
To the person who shall raise the greatest quantity of dry Beans, on an acre,	- - - - -	20
To the person who shall give proof of having produced the largest quantity of dressed Flax raised on an half acre,	- - - - -	20
To the person who shall take up in the season on		

his own farm the greatest quantity of good Honey, and shall at the same time, exhibit superior skill in the management of Bees, - - -	10
For the best Cheese, <i>not less</i> than one year old, and not less in quantity than one hundred pounds, -	10
For the next best do. do. - - -	5
For the best Cheese, <i>less</i> than one year old, -	10
For the next best do. do. - - -	5
To the person who shall raise the greatest quantity of Vegetables, grain, peas and beans excepted, for winter consumption of the stock on his own farm, and not for sale, in proportion to the size of the farm and stock kept, having regard to the respective value of said vegetables as food, stating the expense of raising the same, and the best mode of preserving the same through the win- ter, - - - - -	30
To the person who shall raise the greatest quantity of winter Wheat on an acre, - - -	30
To the person who shall raise the greatest quantity of spring Wheat on an acre, - - -	30
To the person who shall prove to the satisfaction of the Trustees, that his mode of rearing, feeding and fattening neat cattle is the best, - -	20
For the best Butter, not less than fifty pounds, -	10
For the second best do. do. - - -	5
For the best Sole Leather, not less than five sides,	10
For the second best do. do. - - -	5
For the best dressed Calve Skins, not less than twelve in number, - - - - -	10
For the second best do. do. - - -	5
For the best five barrels of superfine Flour, manu- factured in the State of Massachusetts, from wheat raised in this state, - - - -	25
For the greatest quantity of Butter and Cheese, made between the 15th of May, and the 1st of October.	

from not less than four Cows, the quality of the Butter and Cheese, and the number of Cows to be taken into consideration, and specimens to be exhibited at the Show, of not less than twenty pounds of each, and the mode of feeding if any thing besides pasture was used, - - - - - 20

To the person who shall prove by satisfactory experiments to the satisfaction of the Trustees the utility and comparative value of the cobs of Indian Corn, when used with or without the grain itself, ground or broken, - - - - - 20

To entitle himself to either of the Premiums, under this head of Agricultural Experiments, the person claiming, must cultivate a tract of at least one acre in one piece, with the plant or production for which he claims a premium (except flax,) and must state, in writing, under oath of the owner, and of one other person, (accompanied by a certificate of the measurement of the land, by some sworn surveyor,) the following particulars :

1. The state and quality of the land, in the spring of 1821.
2. The product and general state of cultivation and quantity of manure, employed on it the year preceding.
3. The quantity of manure used the present year.
4. The quantity of seed used, and of Potatoes the sort.
5. The times and manner of sowing, weeding, and harvesting the crop, and the amount of the product ascertained, by actual measurement, after the whole produce, for which a premium is claimed, and the entire expense of cultivation.

And in relation to all Vegetables, except Potatoes, Onions and common Turnips, the fair average weight of at least twenty bushels must be attested ; and if hay scales be in the town, in which raised, not less than three averaged cart loads must be weighed.

The claim under this head, together with evidences of the actual product, must be delivered, free of postage, to Benjamin Guild, Esq. Assistant Recording Secretary of this

Society, on or before the first day of December next. The Trustees not intending to decide upon claims under the head of Agricultural Experiments, until their meeting in December.

FOR INVENTIONS.

To the person who shall use the Drill Plough, or Machine, and apply it most successfully to the cultivation of any small Grains or Seeds, on a scale not less than one acre, - - - - 20

To the person who shall invent the best Machine, for pulverizing and grinding Plaster to the fineness of twenty five bushels per ton, and which shall require no more power than a pair of oxen or a horse, to turn out two tons per day, and so portable that it can be removed from one farm to another without inconvenience, - - - 30

To the person who shall produce, at the show, any other Agricultural Implement of his own invention, which shall, in the opinion of the Trustees, deserve a reward, a premium not exceeding 20 dollars, according to the value of the article exhibited, - - - - - 20

In all cases proofs must be given of the work done by the Machine, before it is exhibited; and of its having been used and approved by some practical farmer.

FOR FOREST TREES.

For the best plantation of White Oak Trees, not less than one acre, nor fewer than one thousand trees per acre, to be raised from the acorn, and which trees shall be in the best thriving state on the first of September, 1823, - - - \$100

For the best Plantations of White Ash, and of Larch Trees, each of not less than one acre, nor fewer than one thousand trees per acre to be raised from the seeds, and which trees shall be in the best thriving state on the first of September, 1823, - 50

For the best Live Hedge, made of either the White

or Cockspur Thorn, planted in 1820, not less than one hundred rods, and which shall be in the best state in 1823,	- - - - -	50
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FOR DOMESTIC MANUFACTURES.

To the person or corporation, who shall produce the best specimen of fine Broadcloth, not less than 1 5-8 yards wide, exclusive of the list, 40 yards in quantity, and dyed in the wool,	-	\$30
For the second best do. do. do.	- - -	20
For the best superfine Cassimere, not less than 3-4 yards wide, nor less than forty yards in quantity,		15
For the second best do. do. do.	- -	10
For the best superfine Sattinet, 3-4 yard wide, not less than fifty yards,	- - - -	10
For the second best do. do. do.	- - -	6
To the person or corporation, who shall produce the best specimen of Cotton Cloth, manufactur- ed in this State, not less than fifty pieces,	-	20
To the person who shall produce the best speci- men of any other fabrics of Cotton, manufactured in this State, in public factories, not less than fifty pieces,	- - - - -	20
In private families, not less than five pieces,	-	20

FOR HOUSEHOLD MANUFACTURES.

For the best Woollen Cloth, 3-4 wide, not less than twenty yards in quantity,	- - - -	\$12
For the second best do. do.	- - -	8
For the best double milled Kersey, 3-4 yard wide, not less than twenty yards in quantity,	- -	12
For the second best do. do.	- - -	8
For the best Coating, 3-4 yard wide, and not less than twenty yards in quantity,	- - -	8
For the second best do. do.	- - -	6
For the best Flannel, 7-8 yard wide, not less than forty five yards in quantity,	- - - -	10
For the second best do. do.	- - -	7

For the best do. 4-4 yard wide Carpeting, not less than thirty yards in quantity, - - -	15
For the second best do. do. - - -	7
For the best 5-8 yard wide Stair Carpeting, not less than thirty yards in quantity, - - -	10
For the second best do. do. - - -	7
For the best pair of Blankets, not less than 8-4 wide and 10-4 long, - - -	6
For the second best do. do. - - -	4
For the best Woollen Knit Hose, not less than twelve pair in number, - - -	5
For the second best do. do. - - -	3
For the best Worsted Hose, not less than twelve pair in number, - - -	5
For the second best, - - -	3
For the best Men's Half Hose, (woollen) not less than twelve pair in number, - - -	4
For the second best do. do. - - -	2
For the best Men's Woollen Gloves, not less than twelve pair in number, - - -	5
For the second best do. do. - - -	3
For the best Linen Diaper, 5-8 yard wide, and not less than thirty yards in quantity, - - -	5
For the second best do. do. do. - - -	3
For the best 4-4 yard Diaper, (for table linen) not less than thirty yards in quantity, - - -	10
For the second best do. do. - - -	5
For the best specimen of Sewing Silk, raised and spun in this State, of good fast colours, not less than one pound, - - -	6
For the second best do. do. - - -	3
For the best Linen Cloth, (for shirting or sheeting) one yard wide, and twenty-five yards long, -	8
For the second best do. do. - - -	4

All the above Manufactures, except when of Cotton, must be of the growth and manufacture of the State of

Massachusetts. And all Manufactures, when presented, must have a private mark, and any public or known mark must be completely concealed, so as not to be seen, or known by the Committee, nor must the Proprietors be present when they are examined; in default of either of these requisitions, the articles will not be deemed entitled to consideration or premium.

Animals, Manufactures, or Articles, may be offered for premium at Brighton, notwithstanding they may have received a premium from a County Agricultural Society.

It is understood, that whenever, merely from a want of competition, any of the claimants may be considered entitled to the premium, under a literal construction, yet if, in the opinion of the Judges, the object so offered is not deserving of any reward, the Judges shall have a right to reject such claims. Persons to whom premiums shall be awarded, may, at their option, have an article of Plate, with suitable inscriptions, in lieu of money. Premiums will be paid within ten days after they shall be awarded.

That in any case in which a pecuniary premium is offered, the Trustees may, having regard to the circumstances of the competitor, award either one of the Society's gold or silver medals in lieu of the pecuniary premium annexed to the several articles.

That if any competitor for any of the Society's premiums shall be discovered to have used any disingenuous measures, by which the objects of the Society have been defeated, such person shall not only forfeit the premium which may have been awarded to him, but rendered incapable of being ever after a competitor for any of the Society's premiums.

All premiums not demanded within six months after they shall have been awarded, shall be deemed as having been generously given to aid the funds of the Society.

The Trustees of the Massachusetts Society for Promoting Agriculture, hereby give notice, that they intend, on the second day of the Cattle Show, viz: On the 10th day of October next, to give premiums to the Owners and Plough-

men of the three Ploughs, to be drawn by oxen, which shall be adjudged, by a competent committee, to have performed the *best work, with least expense of labour*, not exceeding half an acre to each Plough, and of such depth as the committee shall direct.

First Plough	-	-	-	-	-	-	-	-	\$20
Ploughman,	-	-	-	-	-	-	-	-	10
Driver,	-	-	-	-	-	-	-	-	5
Second Plough,	-	-	-	-	-	-	-	-	12
Ploughman,	-	-	-	-	-	-	-	-	6
Driver,	-	-	-	-	-	-	-	-	3
Third Plough,	-	-	-	-	-	-	-	-	8
Ploughman	-	-	-	-	-	-	-	-	4
Driver,	-	-	-	-	-	-	-	-	2

In each case, if there be no Driver, both sums to be awarded to the Ploughman.

The persons intending to contend for these Prizes, must give notice, in writing, to S. W. POMEROY, or GORHAM PARSONS, Esquires, of *Brighton*, on or before the 2d day of October, so that proper arrangements may be made for the purpose. No person will, on any consideration, be admitted without such notice. The competitors will also be considered as agreeing to follow such rules and regulations as may be adopted by the committee, on the subject. The Ploughs to be ready to start at 9 o'clock, A. M.

The result of the last Ploughing Matches at Brighton, and the satisfaction expressed by so many of their agricultural brethren, will induce the Society to continue these premiums annually, in connexion with the Cattle Show; as an efficacious means for exciting emulation and improvement in the use and construction of the *most important instrument* of agriculture.

Persons intending to offer any species of Stock for premiums, are requested to give notice thereof, either by letter, (post paid) stating the article, or to make personal application to MR. JONATHAN WINSHIP, at *Brighton*, on or before the

9th day of October, and requesting him to enter such notice or application; so that tickets may be ready at 9 o'clock on the 10th. No person will be considered as a competitor who shall not have given such notice, or made such application for entry, on or before the time above specified.

All articles of manufactures must be entered and deposited in the Society's rooms on Monday, the 7th of October, and will be examined by the committee on Tuesday, the 8th, the day before the Cattle Show, and no person but the Trustees, shall be admitted to examine them before the show. The articles so exhibited must be left till after the show, for the satisfaction of the public.

The applicants will be held to a rigid compliance with this rule relative to entries, as well as to the other rules prescribed.

The examination of every species of stock, (except working oxen) will take place on the 9th; and the trial of Working Oxen, examination of Inventions, and Ploughing Match, on the 10th of October.

The Trustees also propose to appropriate, on the second day of the Cattle Show, their Pens for the public sale of any Animals, that have been offered for premium, and also of any others, that are considered by them, as possessing fine qualities; and their Halls for the public sale of Manufactures. Both sales to take place at half past eleven o'clock, precisely. And for all Animals or Manufactures, that are intended to be sold, notice must be given to the Secretary, before ten o'clock of the 10th. Auctioneers will be provided by the Trustees.

By Order of the Trustees,

J. LOWELL, J. PRINCE, G. PARSONS, E. H. DERBY,	} Committee.
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January, 1822.

MASSACHUSETTS

AGRICULTURAL JOURNAL.

Vol. VII.]

JUNE, 1822.

[No. II.

REMARKS ON THE MANNER, IN WHICH THIS JOURNAL IS CONDUCTED, AND THE RULES BY WHICH THE COMMITTEE, ENTRUSTED WITH THE PUBLICATION, ARE GOVERNED. By J. L. *one of that Committee.*

THE principal object of these remarks, is, to discharge the Trustees, as a body, from all responsibility for the faults, or for the errors or mistakes of the essays published under their sanction. For the last ten years, the Trustees have annually appointed a committee for the publication of the Journal, to whom are regularly referred all articles addressed to the Society; and that committee are alone responsible for any injudicious selections.

The Committee thus appointed do not consider themselves as in any degree responsible for the correctness of the statements, or the soundness of the theories of the various writers, whose essays they publish. Their rule is to admit every essay, which appears to contain any new hint in relation either to Agriculture or horticulture. It is manifestly impossible for them to judge of the correctness in point of *fact*, of any statement, made by a correspondent, and they have believed, that a more free and unreserved communication of all Agricultural experiments, whether the conclusions drawn from them are erroneous, or are not, is of great use. The cautious farmer, if he is struck with their novelty, may try them for himself. If they are found to fail, he will not repeat

the experiment, but he will be very careful to inquire, whether he has faithfully followed the instructions of the first essayist. Whether his soil was the same as that in which the first experiment was made, and whether he has taken the same pains to produce the proposed result. If he is satisfied that he has so done, and that the novelty recommended is not entitled to his confidence, he will abandon it.

It is true, that with respect to many subjects intimately connected with the prosperity of our agriculture, our Journal during the last thirty years has contained a great number of opposite, and irreconcilable opinions. But this ought not to diminish the public confidence, since it is avowed to be conducted on the principles of free inquiry, and since it is not more liable to this objection than all similar works published in this, or in the European world. Men of science are found to differ on most essential points. How many theories have been published, have prevailed for a time, and have gone into oblivion, in the important science of medicine! How materially has chemical science changed, not only since the time of Priestley and Black, but since it was supposed to be irrevocably and permanently fixed by Lavoisier and the French chemists of his school! How great are the divisions of theoretical opinion among the Geologists, the Wernerians and Huttonians!

It is not therefore surprizing, that, such an art as agriculture, though the oldest, yet we may say without a paradox, still in its infancy, so much abandoned to men without science, so vast in its extent, so diversified in its relation to soils and climates, should have its conflicting and often opposite doctrines, and, should be constantly changing, but as we hope to shew, constantly improving. It is not very easy to see how such an *art*, and as we think, as it is now conducted in Europe, a science, as Agriculture, including Horticulture, could be improved, except by the free and unlimited communication to the public through the press, of all well conducted experiments. When the suggestion was first

made that steam would be extensively employed as a means of propelling vessels through the water, without the aid, and even against the force of winds and currents, it was thought an idle speculation, but we have lived to see it realized.

We undertake to say, that thirty years since it would have been believed impossible to raise, as Mr. Hunnawell of Newton did, 112 bushels of Indian Corn to an acre—and I distinctly recollect that when the first accounts in the Bath agricultural papers reached us that they had raised 500 and even 900 bushels of potatoes per acre, it was deemed, if not a fable, yet an experiment peculiar to Great Britain and its soil and climate, and not to be looked for among us.

Still, we have seen that in all parts of our country individuals have succeeded in raising from 450 to 500 bushels per acre of this invaluable root. We have seen that the cultivation of other roots to aid the support of cattle during the winter has advanced much faster with us, considering the late period in which we undertook it than in any part of Europe. We hear, not occasionally but constantly, every year, of 600 or 700 bushels of Mangel Wurtzel, or the white beet—of 500 bushels of the Ruta бага or Swedish turnip per acre, and our cattle are, and must be of course better fed, and eventually highly improved.

But enough has been said on this topic, in favour of our efforts and of the advantages of circulating these accounts of individual success.

It is now proper to recur to our main object, which is to shew, that contradictions will creep into our Journal, and the business of the attentive farmer is to sift the wheat from the chaff.

There is one topic of great moment, which is not even to this day settled in Great Britain, and which has been the subject of various opposite and contradictory statements and experiments in our Journal, during the last thirty years, and that is, whether any considerable saving can be made in the

seed for planting of potatoes. The most careful and penurious culture, if whole potatoes are used, will require thirteen bushels to the acre. In England sometimes thirty bushels are used. This is a great and serious loss and various experiments have been made from time to time with a view to diminish it.

The several projects are,

1st. To use only small potatoes, a bushel of which will plant as much as two bushels of large ones. This is the Irish mode, but it should be recollected, that Ireland is of all countries in Europe the best adapted to this root. Its incessant rains—its cloudy sky—its moist soil, are favourable to the potatoe, which though a native of a southern and perhaps a tropical region, is found only on mountains, where the climate is temperate and the soil moist.

Such I believe to be the fact from the best examination I have been able to make.

2dly. To cut the large potatoes into small parts.

3dly. To scoop out the eyes.

4thly. To take only the sprouts.

All these modes have had their advocates, and experiments (on however in all cases, a small scale,) have gone the length of proving satisfactorily, that each of these modes *will answer*, and will produce a good crop.

If this were true in general culture, there can be no doubt that the whole farming interest would prefer sprouts, because the potatoes saved on an acre of ground would nearly pay for the labour of the first planting of the crop. But having had constant access to the best European authorities, and being intimate with some of the best cultivators in our country, I have no hesitation to say, that on an extensive scale, it is better economy to plant at least middle sized potatoes, or cut potatoes, equal in size to those, in preference to any other.

I came to this opinion in the same manner in which we arrive at all other sound opinions.

First, from repeated and extensive experiments of my own.

Secondly, from the fact, that though this system of economy in seed is at least of forty years duration, it has not been adopted generally in the countries most interested, and most distinguished in agriculture, nor do I believe, that one of the advocates for this economy of seed has ever practised it on an extensive scale for any great number of years. In short, I doubt whether it is the usual and ordinary mode of culture of any great farmer on earth. This if it be true, ought to settle the question.

Thirdly. I might add, that the potatoe is by nature formed to furnish from its fleshy, and watery root, the food of the young shoots. It sends out its growing shoots long before it sends forth a sufficient quantity of roots to sustain them. Its natural dependence is on the planted tuber itself for the first four weeks of its growth. It is a violence to the nature, then, of the plant, to deprive it of its maternal support, and though it may survive the shock in some favourable instances, yet on a great scale it will fail.

If therefore in England with its watery sky, and its clouded atmosphere, this plan has never gone into operation, (Dr. Anderson's weight notwithstanding,) it seems to me to be useless to attempt it here, in our climate, always inclined to more drought, than moisture.

The foregoing remarks have no reference to the ingenious experiments of Mr. Derby of Salem, one of our Trustees, by which he has been enabled to raise four successive crops of potatoes from one set of roots by taking off the shoots from time to time as they were raised in a hotbed frame. This is an interesting horticultural experiment, but I presume he would not recommend it to farmers on a great scale.

It ought also to be understood, that even articles written avowedly *by one of the Trustees*, do not necessarily express the opinion of that body. Perhaps in some cases, not a member of the board may agree with the writer. Every member has his own theories adapted to his own soil, situation and interest.

He makes an experiment and is pleased with it. He communicates it to the board—they recommend its publication. They hope it may be useful—that it may suit some portion of the farmers, who are similarly situated; but they by no means intend to recommend it for general adoption. It is enough for their purpose, that experiments, the only sure ground of philosophical improvement, have been made. Thus, for example, when the Hon. Mr. Quincy published his experiments on Hedge planting for fences, they were aware, that it would not be of much value except on farms destitute, like his, of natural materials for stone walls. In the sandy territory of the old Colony it may be of extensive use, but on farms, such as I know, where the rocks must be got out before the plough can move; where they must be carted to a great distance if not used for walls, where, in short, walls are the cheapest mode of *disposing* of the stones, it is excellent husbandry so to apply them. In a farm of a friend of mine in Milton, if they had not been employed in building walls, they would have cost more for their removal than the land would have been worth.

On the College farm at Waltham, a lot of excellent land, consisting of 13 acres, is furnished a double wall of four feet in thickness round the whole. This will last for a century at least, and by its mode of erection, it did not cost more than it would have done to pile the stones up in vast heaps, covering a great quantity of valuable land.

To recommend hedges in such a situation was never our design, nor, we presume, did it ever enter into the thought of the intelligent writer of that article.

In relation to the *species* of thorn recommended by Mr. Quincy, truth, and long experiment enables, and requires me to say, that the Virginia thorn so much recommended by Mr. Maine, from whose account Mr. Quincy very properly introduced and recommended it, is not by any means the best adapted for general use for quick or live hedges. It is too

apt to run up, and not sufficiently prone to throw out strong lateral shoots, and it is believed, that either the common White Hawthorn of England or even our own New England Cockspur thorn is better adapted for this purpose. We make these remarks not with the view of diminishing the merit of Mr. Quincy in making these experiments and communicating them, but simply to make it known, that what we publish is intended merely as hints which others may follow or pursue, and we feel bound to state from time to time any doubts which may occur to us on the subject, or any opposite experience.

We have been more free in speaking of the limited extent to which thorn hedges can be carried in the stony and rocky country of New England, and the defects of the variety of thorn first introduced, because we are ready to say, and say it cordially, that we think all that portion of our country which resembles the estate of Mr. Quincy, such as a part of Essex, Middlesex, Plymouth, Bristol, and some of the lands on Connecticut river, will finally derive great benefit from the introduction of live fences. They are yet in their infancy, and to Mr. Quincy we owe their introduction. It will be many years before they will be extensively used, but they will we presume eventually be introduced in all countries where stones cannot be found, and he will I trust have the credit of introducing them, a credit, which will increase as they shall be extended. They are very beautiful. They give an air of cultivation to the landscape—they shelter the crops, and produce a general effect of which no man who has not seen the difference between French and English scenery can have any adequate conception.

Some persons have doubted the applicability of the system of soiling to our country. By soiling, we mean, (as some of our readers may not be acquainted with the term, which we must confess is a barbarous one, having no sort of connexion with its real meaning) the feeding cattle either in the barn or barn yard through the summer

months with fresh cut green food. Mr. Quincy has very fully and very satisfactorily proved, that it can be profitably done in our country—that its cost, compared to its usefulness, is very small.

We agree however with many farmers, that it is *not generally* applicable to our present state of agriculture. It is of great use where fencing stuff is dear—where grass is of great value—where cultivation is carried to great perfection—where population treads very close on the heels of production. But in our country, even in the populous parts of New England, (we say it with great respect for the gentleman who has called our attention to it,) we doubt whether it can be adopted with great advantage, except on lands in the vicinity of great cities, or on farms reduced to a state of great improvement and high cultivation, or on very small farms, where it is invaluable. For example, to myself its value is beyond calculation. But my next neighbour has a rocky pasture, to subdue which, to any tolerable state, for any sort of cultivation, would cost the whole value of his farm—but it makes excellent pasture land. The cattle thrive admirably among the rocks and shrubs of this stubborn pasture, which will never be cultivated, till our country shall count as China does, its 270 millions of souls.

Immense woods and pasture grounds exist within 50 miles of Boston which can be used in no way so profitably as they are now used, for pasture. Till *they* are taken up and cultivated, soiling will be limited, *must* be limited only to small cultivators, or great experimental farmers. If it be asked why *are not* these waste pasture lands taken up for cultivation? my answer is, they are not wanted—they will not pay the price of reducing them to cultivation. They will remain as they are, till New-England shall have its half a dozen Manchesters and Birminghams, and then soiling will become, and never till then, extensively in use.

I suggest these opinions as from myself alone, lest other members of the board of agriculture should be implicated.

No man ought to be ashamed of avowing his opinions, and we should make but small progress, in any art, if we feared to express our sentiments, because different ones had been announced by respectable men.

My own ideas as to the most practicable improvements in the agriculture of this part of our country, are principally confined to the following particulars.

First. The improvement of the character and qualities of all our domestic animals. It would not be extravagant to say that the expense and profits of raising stock would be beneficially affected by having the best races of every sort, that are now known in Europe. New England will never be a grain country, any more than she will become the raiser of tobacco or cotton. But she *can* probably supply two millions of people with beef, pork, and wool.

Secondly. To do this, she may and must use for half a century her natural pastures, because she cannot afford, at present prices, to break up her uncultivated lands, but she *can* raise, and raise to advantage, by a succession of crops, a sufficient supply of succulent roots, such as, the Swedish turnip—the Mangel Wurtzel or white beet, carrots and potatoes, to come in aid of her cultivated and natural grass lands, to support, and improve the condition of her stock of animals, to the extent of double, nay I believe, treble their present numbers.

They will not, they *cannot* exceed the *demand*, that must regulate the supply, after all we can say or write, but much may be done to enable us to raise cheaper and better animals. If cheaper, the *demand* will be greater.

We have done much in this way, but much remains to do.

Thirdly. We are very deficient in Horticulture. To be sure there is no great profit in cash arising to the farmer from gardening beyond the limits of twenty miles from a great town—but when men have arrived to the degree of comfort which our farmers generally enjoy, they ought to seek innocent luxuries. We cannot hope or expect to see their front

yards ornamented, like those of the Dutch and English cottagers, who are not worth a twentieth part as much as they are, with flowering shrubs and plants, so neat and so beautiful as to realize the description of the poets, who have descanted on pastoral life. This depends in those countries on fashion, and as the more opulent indulge in those luxuries, the others follow as imitators; but a delightful pear—an excellent plum or peach, or an admirable winter apple, fresh in April, would be as sweet to the palate of a farmer as to that of a luxurious and opulent merchant, and why these are neglected, I never could comprehend, as the labour amounts to a trifle in procuring and in preserving them.

Perhaps New England owes its inferiority in these particulars more to the want of good nurseries, than to any other cause. No farmer ought to be without his asparagus bed, which, once laid down, will last without his labour for forty years—no one ought to be without his patch of green peas—lettuce—early and late beans. If more attention were paid to these comforts, we should hear less of spotted and typhus fevers in our otherwise healthy villages, and our females in the country would be more proud of the grounds about their houses, and take more interest in their neatness and comfort than some, perhaps too many of them now do. We do not mean to say, there are not a great many farmers who pay some attention to these things, but the deficiency is deplorable.



[The following article on the raising of Peas in field culture by the Hon. Mr. Pickering, President of the Agricultural Society for the County of Essex, was sent for our number which issued in June last, but was by accident mislaid. A notice was taken of it in that number, but it was not recovered from its concealment till this moment. We are always happy in publishing the remarks of a gentleman so well experienced in agriculture, and it does not derive less interest from the deserved respect and confidence which the writer has always enjoyed. The occasion leads us to remark, that as there is but one publication in the state on the subject of agriculture exclusively devoted to that object, it would be desirable that all communications to the local boards, which they should deem worthy of publication should be for-

warded to us for publication, and they will be cheerfully received and duly noticed.---Such we had hoped would be the effect of the creation of societies in the several counties.]

To JOHN LOWELL, Esq. Corresponding Secretary of the Massachusetts Agricultural Society.

Salem, Feb'y. 21, 1821.

DEAR SIR,

By the last number of your Agricultural Repository and Journal, which I have recently received, I observe that the Trustees offer a premium for the greatest quantity of dry pease that shall be raised on an acre, not less than thirty bushels. The soil must be fertile to yield such a crop, and so clean that the pease shall not be infested with a growth of weeds. But the greatest difficulty to be encountered will be, to produce peas that shall be free from bugs; for I presume it is such a crop alone that will entitle a claimant to the premium. An effectual remedy to this evil is *late sowing*; but the hot sun of June will so pinch the vines of late sown pease, that the crop will be small; unless the land be *moist* as well as *rich*. To exemplify this remark, as well as to communicate some information concerning the pease bug, I present to you the following statement of facts and observations.

In the year 1787, at Wyoming in Pennsylvania, I sowed in my garden, some beds with the early Charlton pease, and some with the green marrowfat: it was the first week in May. In July following, the pods of the first were abundant, yielding very fine green pease. A part remaining un-gathered, ripened, and were saved for seed for the next year. The green marrowfats succeeded, were also abundant, and the most rich and delicate I had ever tasted.—The ground had been lying in grass nine or ten years, and no *manure* was applied. A part of the marrowfats ripened, and were also saved for seed.

In the spring of 1788, I took both of these parcels of seed to sow. On opening the small bag of the early Charlton, I found (as I had expected) the pease swarming with

bugs. When I had sown them, I opened the bag of marrowfats ; but to my surprize, not a single bug was to be seen—the pease were all sound. The obvious inference was, that this mischievous insect is limited to a certain period for depositing its eggs ; and that if the tender pods are not found till that period is passed, the pease will be free from bugs. And intending to raise some field pease that year, this was decisive as to the time of sowing. Nevertheless, I had the curiosity to inquire of an old farmer, my neighbour, at what time I must sow the common field pease to escape the bug ? “ In the old of the moon in May ” was his answer. “ But there are two old moons in the present May ” I replied. He was of course confounded.

I delayed sowing my field pease till about the 20th of May. The produce was small ; for the ground was not only *dry*, but *poor* ; the crop however sufficed for my family, and was entirely free from bugs.—The next year I repeated the same experiment ; and with the same success ; obtaining a perfectly clean but a small crop ; for I had heedlessly again sown the seed on a poor and dry soil. The third year I attempted a better practice ; selecting a piece of rich land, lying low, and sufficiently moist to counteract the effect of such late sowing : and the result equalled my expectation. I harvested ten bushels of fine pease, and one bushel of an inferior quality, from half an acre of ground. It was too thinly seeded ; one bushel only having been sown (broadcast) when $1\frac{1}{2}$ bushel would have been better ; for the vines should grow close enough to give mutual support, and to smother the weeds. It is difficult to cover pease with the harrow ; they ought to be ploughed in. Lord Kames says that “ pease laid a foot below the surface will vegetate : but that the most approved depth is six inches in light soil, and four inches in clay soil.”

I had conjectured, that in the season for depositing the eggs in the tender pods, the bugs opened a passage through them, and into the newly formed pea, and so deposited their

eggs : just as I had seen the locust, with its borer, pierce the young shoots of trees, and thrust in its eggs. But twenty years afterwards, I found in the first volume of the Memoirs of the Philadelphia Society for promoting Agriculture, a paper on the pea bug, by a distinguished Naturalist, the late William Bartram of Pennsylvania, of which I subjoin an extract. My conjecture you will place to the score of my ignorance in the science of insects. Of these pea bugs, Mr. Bartram says : “ They feed, when in the caterpillar or grub state, on the green garden or field pea, as soon as the pods have arrived to a state of maturity sufficient to show the pease which are within them. In the evening, or on a cloudy day, the female deposits her eggs on the outside of the pods ; these eggs or nits soon hatch, and the young larva or worm eats directly through, and enters the tender young pea, where it lodges, and remains feeding on its contents, until it changes to a chrysalis, and thence to a fly or beetle, before the succeeding spring ; but do not eat their way out until the colds and frosts are past, which is about the beginning of April, when we generally begin to plant pease.”—“ After they have disseminated their eggs, they perish.”—“ But that which is surprizing and difficult to be accounted for, is, that the worm leaves the *rostellum* or sprout untouched, or at least uninjured ; for almost every pea vegetates and thrives vigorously, notwithstanding the *corculum* (the rudiment of the young plant) and plumula seem to be consumed.”

Wyoming (now Wilkesbarré) is in latitude 41°. 13'. The active flight of the pea bug will doubtless be earlier there than in our own region. One or two years observations, in different climates, may be requisite to ascertain the time when their flight is over and they perish. As pease of the various sorts blossom and form their pods at very different times, some that come late may perhaps admit of such early sowing as to secure a vigorous and ample growth of the vines

before the intense heat of summer arrives : in which case a satisfactory crop may more surely be expected.

Having noticed the folly of regarding the Moon in relation to the time of sowing pease, I add, that the idea of its influence in any other operations in husbandry, ought to be alike discarded. It is a mischievous supposition kept alive by tradition, and countenanced and supported by the idle remarks and representations in almanacks. The figure of a man marked with the *signs*, and the prognostications of the weather, ought to be expunged ; and every well disposed almanack maker would banish them if he knew the injuries they occasion, by misleading the farmer in any branch of rural economy.—I once heard some farmers—speaking of spreading manure on grass-land in the spring—say very gravely, *that it should not be done when the horns of the moon were turned upwards, for then the manure, instead of sinking into the ground, would rise with the grass, and do no good.* On the contrary, they mentioned one farmer who *would not set up his worm fence when the horns of the moon pointed downwards*—for then the stones placed under the angles of the fence would sink, and the lower rails touch the ground and rot. And an industrious farmer in another state told me that he had slaughtered a fine heifer calf which he wished to have raised, *because it was dropped in the dark of the moon.* If I had not witnessed these facts, I should have hardly thought it possible that such ridiculous notions could have been entertained by any persons who claimed a share of common sense. Even the changes of the weather so generally supposed to be influenced by the phases of the moon, have been found, by long course of observations, to happen at all periods of the moon's appearance indiscriminately. This fact which your father mentioned to me twenty years ago, was this day repeated to me by the gentleman who had noted those observations. Were it otherwise, he remarked, —did the moon's influence determine the weather—then

should not this be fair or foul, at the same times, in all countries on the globe ?

With great respect and esteem,

I am, dear sir,

Your obed't. serv't.

TIMOTHY PICKERING.

COMPARISON OF THE PRESENT WITH SOME PAST SEASONS.

WE have for several years published such a comparison, and farmers and general readers having expressed a certain degree of pleasure from the statement, we continue it. It certainly may be made of some use, if cultivators, instead of consulting the almanack, will attend to the indications of nature. Certain plants will not flower till the earth has arrived at a given degree of temperature.

They vary from five to twenty days in the time of flowering in different seasons. If, therefore, as to the tenderer plants, the Indian corn, squash, pumpkin and melon, we should resolve to plant them, not at a determinate period of the year, but when we should find by the flowering of certain plants, that the soil is so warm as to endanger their rotting in the earth, we think some good would be attained.

We shall take a few plants as a specimen, and compare the present season with some of the earliest during the last nine years.

The *Cherry* opened its blossoms in 1813, May 10th—1815, May 10th—1816, May 6th—1818, May 17th—1820, May 2d—1822, May 1st.

Asparagus was fit for the table for the first time in 1813, May 14th—1815, May 6th—1816, May 5th—1818, May 15th—1820, May 1st—1822, May 1st. It should be remarked that the *Asparagus* was cut from the *same* bed in each year—a bed was planted 33 years since. and never

changed, and one which has been constantly growing better—an important fact in horticulture.

Plums were first in flower in the year 1815, May 14th—1817, May 7th—1819, May 13th—1821, May 11th—1822, May 4th.

Pears began to blow for the first time in 1813, May 20th—1815, May 12th—1817, May 7th—1819, May 17th—1820, May 9th—1822, May 5th.

Apples first showed their open flowers, in 1813, May 23d—1816, May 18th—1817, May 12th—1819, May 19th—1820, May 11th—1822, May 9th.

It will be seen by this table, that the present season is the earliest on the whole which we have had for nine years.

There is, however, a manifest difference between the relative times of flowering of the *different* plants in the several years; and this is readily accounted for by the circumstance, that a single turn of cold weather will check the progress of all plants, and the season which may have produced the earliest flowers on the Apricot, the earliest of our fruits, may not be earlier than usual in producing flowers on the Apple.

To give one practical rule, which we believe may be of some use, we should say, that when the Apple tree flowers, we may safely (be it sooner or later) venture to put our corn, squashes and melons into the earth.

This season was the earliest as to the opening of the ground known on my place for 16 years. I planted potatoes and peas on the 7th of March, fifteen days earlier than I was ever able to do it before—but as I have often before remarked, all these differences disappear as the season advances, and on the whole I doubt whether the present season is in advance more than four or five days of that of common years. It however has been a great relief to the labour of the farmer—His season of labour has been extended this year at least three weeks in this vicinity, and this is of great value to him. The show of blossoms in all kinds of fruit is very good, nearly double to that of the last year. The present

cool weather is highly beneficial to the fruit. We had a pretty severe frost on the 6th inst. which in low grounds injured early potatoes, but the damage on the whole was not great. If we can escape another for one week more, we may presume on a fruitful year. The prospect of grass is at this moment above that of ordinary years.

A ROXBURY FARMER.

TO JOHN LOWELL, Esq. Secretary to the Massachusetts Agricultural Society.

SIR,

I HAVE observed for several years past at this season of the year a communication in the public prints, signed "A Roxbury Farmer," giving a statement of the flowering of certain plants on certain days, which, when compared with preceding years, are said to be indications of the forwardness or tardiness of the season.

In the Daily Advertiser of the 11th inst. I observed with much pleasure a communication from the same quarter, making a comparison of the present with past seasons, going back as far as 1813, and taking as the ground of the comparison the cutting of asparagus, and the flowering of certain apple, pear, cherry, and plum trees, standing in the open ground. In this piece there is a suggestion which I think highly important, and which, if properly improved by the farmers and gardeners in the neighbourhood of this town, would soon supply our market from the open ground with early vegetables much sooner than usual. The suggestion alluded to is, that the planting of tender seeds like Indian Corn, beans, &c. and those which produce tender plants like melons, squashes, &c. should be regulated by certain indications of nature, and not by the almanac.

It may be objected to by some persons as being too uncertain in our climate where we are subject to cold east

erly rains for several days together during the month of May; and to severe frosts even as late as the month of June; but a little consideration will, I think, show that these objections are not well founded.

If each farmer or gardener will make his own observations within his own grounds, and always upon the *same* plants, while in health, and under the same degree of cultivation; and make his notes with care when the state of the blossom is at the same stage of forwardness, there can be no doubt of its correctness. Let him take his own asparagus bed as an index of the warmth of the ground in the early part of May, and he can judge with great correctness, provided the asparagus bed be always forked and dressed on the same day, or nearly, in the month of April, and with the same quantity and quality of manure: for on this plant the warmth of the soil acts immediately on the *root* alone, and therefore there can be no better guide for ascertaining the temperature of the ground at that season. If we can plant corn and squash seed the middle of May when the asparagus is in a state to be cut the 7th of that month, why not plant those seeds the 7th when the asparagus is fit to cut the first of May? A peach tree, cherry tree, or a plum tree in good health, is also a fair indication of the temperature of the earth, as is the apple and pear tree, if always kept in a good state, or in a cultivated or ploughed piece of ground; but in the orchard, where the grass is allowed to choak the circulation, three years out of five, trees are not so correct an index as the asparagus bed, or as they themselves are when growing in a garden or ploughed field where the ground is always open, so that the rays of the sun and the warmth of the atmosphere enter with less obstruction.

I have said that the *same* plant should always be taken as the standing index, because peaches, for instance, of different sorts or varieties, and cherries of different sorts, as well as

pears and other fruits, open their buds and blossoms sooner or later according to the respective habits of each individual or variety ; so that a person who should take one year an early peach, and the next the late heath as his index, might find himself very far from correct.

With respect to the rains which prevail in the month of May, by which seeds are rotted in the ground, I apprehend that if the ground be warm enough to excite the germ of the seed *early* in May, it will as soon be out of danger from rot, as if it be planted the *middle* of May ; for the rains prevail as much towards the last as the first of the month. And as respects the late frosts which are dreaded so much by many people when the spring is early open, I confess, that so far as my own observation goes, I should fear it less when the spring is forward than when it is tardy. I don't mean to say that premature heat, which we sometimes have, is not like to be followed by frosts in May ; but when the spring continues to put forth new evidence daily of its settled state in a regular and natural manner, so as to bring forward vegetation *early*, and with unusual vigour in May, I think there is much less danger of late frosts than when the cold blasts from the Canada borders are constantly interrupting its progress—because in one instance the earth is gradually warmed, and creates within its influence a warm atmosphere that prevents frost from taking place ; whereas in the other case the earth continues cold, and the temperature of the atmosphere near its surface is less capable of resisting the night chilling dews which fall upon the young plants that are putting forth. I believe that if recourse be had to the state of the weather for any ten years together from the 25th March to the 5th May, it will be found that late in the season frosts have occurred much more frequently when the average temperature of the spring months has been *below* rather than when it has been *above* any given point.

If there be any thing worth your notice in these observa-

tions, you are at liberty to make such use of them as you may judge proper ; if there is not, they will serve as an expression of my thanks to the author of the communication signed "*the Roxbury Farmer*" for the suggestions he has made ; and I hope that every one who meets with that article may receive the same impressions that I have from it.

Yours respectfully,

INDICATOR.

May 13, 1822.

ON THE CULTURE OF SEA KALE (CRAMBE MARITIMA,) AND OF THE SALSAFY, OR OYSTER PLANT, (TRAGGOPOON,) FOR THE MARKET, AND FOR PRIVATE USE. By J. LOWELL.

WE have introduced these plants some years since to the notice of our cultivators, but there has been but small progress yet made in their use, and of course in their cultivation. This cannot have arisen from any dislike to them, because when introduced to the table, they are universally approved, and used. They are both favourites at European tables, and are accounted luxuries. The first is an earlier product than asparagus, and much preferred by those who relish the Cauliflower, which it resembles in its flavour. They have been sent to our market, but do not meet a ready sale, and of course, those who supply the market are not encouraged to raise them. It cannot be supposed that the taste of the people in this country is essentially different from that of the inhabitants of Europe. The truth is, that we are contented with a much narrower list of articles of luxury than the taste of Europeans demand. *They* are not contented with potatoes only in the species, a new plant, even with them, unknown before the reign of Elizabeth. *They* require a new vegetable every month, and we are fast advancing to a state of luxury, which will require and demand variety. Even in England, two hundred years since, they could furnish no salad, but

water cresses, and in our own country, thirty years ago, we were strangers to the Rhubarb, (*Rheum Rhaponticum*) which has now become an article of extensive culture, far preferable in many respects to the unripe gooseberry, for tarts, puddings and preserves. It comes into use some weeks earlier—is raised with unfailing certainty and with trifling care—is perennial and abundant—is supposed to be more wholesome than the gooseberry. It is now in general use, and constantly at market. We are indebted for its introduction to an amateur in Horticulture in the state of Maine. This example shows, that we may introduce something new, and that our horticulture was not at its highest point before.

The Sea Kale is a plant of recent introduction in Europe. Perhaps its culture cannot be traced back beyond forty years. It is a native of the sea coast of the southern parts of England, where it is found growing in sea sand.

It is very hardy—grows in any tolerable soil—is perennial, and costs not half the labour bestowed on asparagus. It may be raised from the seed or from the root, and fifty plants, occupying a very small space, will supply a single family. In its taste it resembles the Cauliflower. The only labour it requires is to cover it with sand, or earth, or with pots, or boxes in March, so as to exclude the light and to blanch it, or make it white. If not blanched it is neither so beautiful to the eye, or so tender, or so delicate to the taste as if blanched. It should be thoroughly boiled and is better if boiled in milk and water. It should be served up like Cauliflowers, with melted butter. It comes in at a season in which our vegetables in this country are very deficient.

If in England and France where it has to compare at the same table with green pease, and spinach, it is admired as a luxury, can it be possible that it will not eventually succeed with us? We shall be happy to furnish seeds of it to any persons who may be disposed to introduce it. I am not discouraged by the tardiness of its progress in coming into use; I have seen such changes in our horticulture, that I feel con-

vinced, that we shall eventually have a vegetable market nearly equal to that of Covent Garden, though at present we are to be sure at a mortifying distance from it. One remark must impress itself, I am sure, deeply, on every man who is interested in such subjects, small to be sure in some views, but important in others—and that is, that if in older countries with milder and shorter winters, in which they give you green vegetables nine months in the year, they value such a plant as the Sea Kale, it must be of greater value to us, whose soil is bound in frost from the 10th of November to the first of April, and sterile till the first of May.

There is another reflection of some moment. Every new plant introduced for the table increases the comforts and diminishes the expences of the middling classes of citizens. A vegetable market fully supplied, extends very materially the means of subsistence. Competition will produce abundance, and of course cheapness. The Sea Kale is easily raised, and endures forever. It requires no manure as the Asparagus does. It is indeed injured by it, and if our farmers in the interior had a patch of it in their gardens, they would have an earlier succulent vegetable to eat with their salted provisions, than any other they could raise.

The Salsafy, or Oyster plant, is another vegetable of easy production, and universally eaten, when introduced to the table. I know no one vegetable which is more esteemed.

Yet though it has been in our gardens for ten years, it has never been extensively cultivated for the market, and I think it is owing to its not being generally known. It resembles a small parsnip in its appearance. It is raised annually from seeds, and as easily, requiring no more care than the carrot. It bears a tolerable crop. In Europe it is eaten both boiled and fried. In this country it is parboiled, and then fried either in batter, or without. It forms an admirable garnish for boiled fowls or turkies. In its taste, it so strongly resembles the oyster, than when sliced, and fried in batter,

it can scarcely be distinguished from it. If our gardeners would introduce it into the market, and our citizens once try it, there would be no danger of its ever failing hereafter to be raised. It is in eating from November to May, precisely the period in which our vegetable market is most deficient in variety.

It is not possible for any one to believe without experience, how much we are below every part of Europe in vegetables. The great difficulty in introducing a new plant for the table, is, the want of attention on the part of the consumers. The raisers of vegetables are prompt, and attentive. We shall state one instance in proof of it. A few sweet potatoes, raised here, (inferior to be sure to those of Carolina) were sold in our market at the price of two dollars per bushel. A great many applications were made for slips, but no one succeeded in keeping them over the winter. This spring, we found several of our cultivators for the market, had on their own account, and risk, imported them from the south, and are raising them with spirit. We have no doubt of their success. We are confident they will be regularly for sale in Boston market, from this time forward. We have had experience this spring of their hardihood. They encountered a severe frost on the sixth of May, after having been transplanted from a hot bed, where they were made paternally tender. They were cut down by the frost, but have started again more freely than the common potatoe. They are now one month earlier, than any we ever raised, and we feel no doubt that they will produce an abundant crop, and those which will not sell, will furnish the best possible food, for pigs, cows, and poultry. This is no speculative theory, but the result of four years constant observation and experiment. we have no idea of its being an object of general culture, but it will, and must form a part of the cultivation for the market, and of gentlemen, who feel a taste for horticulture.

[To the Trustees of the Massachusetts Agricultural Society.]

Roxbury, May 14, 1822.

GENTLEMEN,

I AM induced to make some communications to you on the subject of Horticulture which may probably occupy a larger portion of our next number, (if it shall please you to countenance them) than we have generally devoted to this branch of agricultural labour. The reasons for doing it are, that it cannot be denied, that the American cultivators are less experienced in horticulture, than in any other branch of the agricultural art. It cannot be questioned, that while by the spirited attention given to general cultivation, we have made rapid advances towards the state of improvement, which exists in the most cultivated parts of Europe, we are lamentably deficient in gardening, and in the cultivation of fruits and flowers. In fact, with a few exceptions, we are ignorant of the ameliorations which have taken place in Europe in this branch within the last twenty years, and which much exceed the aggregate of improvements for one hundred and fifty years preceding, from the time of Evelyn and Olivier de Serres, to that of Sir Joseph Banks, and of the equally enlightened horticulturist, Thomas Andrew Knight, Esq. whose experiments and remarks form an era as distinguished in horticulture, as that which the great chemists of the present age have produced in that important science.

It is not to the discredit of our country, that we have been so late in our attention to this subject—we have been engaged in pursuits more immediately interesting—in subduing our soil from a state of nature—in furnishing subsistence to our rapidly increasing population, in laying the foundations of states, which may flourish when Europe, overstocked, shall be unable to give support to its unwieldy population. But the more settled parts of the United States, particularly New England, have arrived at the second state of improve-

ment and cultivation. Their soil has been subdued—their population is full, if not redundant. They have acquired capital, and they now require and demand some of those luxuries, which ease and competence *will* obtain at any price.

If it be true, as we have heard, that ten dollars have been paid for a single dessert of early strawberries, it is time, that we should meet this demand, and furnish luxuries, innocent luxuries, for the table, at more reasonable rates.

We are *utterly* destitute, in New England, of nurseries for fruit trees on an extensive scale. We have no cultivators on whom we can call for a supply of the most common plants of the smaller fruits, such as strawberries, gooseberries, raspberries of the superior kinds—we have no place to which we can go for plants to ornament our grounds—we have not a single seedsman, who can always furnish us with fresh seeds of annual flowers on which we can place a reliance. These are trifling evils compared to the want of *bread*, but when we are filled with abundance, we look round for something to gratify our tastes.

Let those, who please, laugh at the absurdity of talking seriously of the importance of raising ornamental trees, shrubs, and herbaceous flowering plants, let them ridicule the zeal, which would furnish us with all the varieties of fruits, which grow from Palestine to Archangel, which would supply our tables with lettuce in February, and green pease in March, yet there are few of these laughing gentlemen who would not gladly see and taste these rarities, and they must be had, and will be had in spite of ridicule. They are in truth as rational sources of pleasure, and as just objects of pride and display as a fine carriage, or superb dresses. They, in truth, give more general pleasure ; for while the coach and the muslin robe are chiefly gratifying to the owner, those who cannot afford either the one or the other, *can feel*, and often do feel, more exquisitely, the pleasures derived from the display of the beauties of flowers, or the taste of the delicious fruits of nature. The cultivator then of fruits and flowers is

much less selfish. Their sweets are not produced for him alone. He can derive little pleasure from them, but by their distribution.

It is not my intention to obtrude my own remarks on this subject upon the public; I have made as little progress as most of my fellow citizens, in this delightful, ornamental, and as I think useful art.

Having recently received the transactions of the Horticultural Society of London, I shall make such extracts from them as appear to me to be new in our country, and calculated to advance the art of gardening. A FARMER.

P. S. I may from time to time make some explanations or notes with the view of rendering the several extracts more useful.

To shew the utter incompetency of our *own* nurseries (if the few we have can be dignified with the name,) I will simply state the fact, that one hundred roots of strawberries, all of which were nearly dead, sold at the late sale at auction for a greater price than fine plants of approved sorts, would be sold for in England, and that raspberry plants sold at such a price, as would have given me six hundred dollars, had I chosen to break up my raspberry plantation and send the plants to auction; and I could have guaranteed better plants and better sorts than any which could be expected in a promiscuous importation, and as good as can be found in Europe. This shews the *demand*, and the *inadequacy of supply*.

I shall commence my extracts from the Horticultural Transactions by some remarks on annular excisions of the bark of fruit trees, with the view of rendering them more prolific, and to bring them earlier into bearing. I introduced this topic into notice many years since from the same excellent authority, and no man who has tried Mr. Williams's plan of girdling or ringing grapes can doubt its value in our climate. It secures the grape against mildew, ripens it several weeks

earlier, and makes the fruit larger and more delicious. This many years experience of myself, and my friend Mr. S. G. Perkins, and many others has most abundantly confirmed; nor have any evil effects been found to result from the practice on the grape. But we should not do justice to the question if we did not add, that Thomas Andrew Knight, Esq. the individual most distinguished in Great Britain for his accurate knowledge of the physiology of plants, although he admits the tendency of this process to promote early bearing in fruit trees, yet doubts, and perhaps more than doubts, whether it does not on the whole, impair the vigour, and diminish the longevity of the trees so treated. I do not understand that his objection extends to the grape and other plants so productive of wood, neither do I believe the objection would apply with so great force in our country, where the growth is so much more rapid, owing to the greater heat of our summers, than it is in Great Britain.

ON A METHOD OF IMPROVING THE PRODUCTIVENESS OF FRUIT TREES.
IN A LETTER TO THOMAS HALE, ESQ. ASSISTANT SECRETARY, BY
GEORGE HENRY NOEHDEN, LL.D. F.R.S. &c. READ JAN. 7, 1817.

DEAR SIR,

In communicating to you the translation of a small tract, which has been sent to our President from Germany, on a method of improving the productiveness of fruit trees, you will allow me to accompany it with a few remarks. The author of the tract in question, who is a clergyman in Saxony, founds his proceedings upon the principle, that a certain controul, to which the *sap* in trees may be subjected, will have the effect of producing a greater degree of fruitfulness than would exist, if it were left to its natural course. He did not, indeed, set out with this hypothesis, when he made his experiments; but he was, in the process of these, ultimately led to it. He obtains his purpose by making annual excisions of the bark, on the branches of fruit trees, or, as

he calls it, *ringing* the branches ; that is to say, cutting rings in the bark. The notion, that barrenness in fruit trees arises from too free and strong a flow of the *sap*, and that by diminishing and checking this, fruitfulness may be obtained, is by no means new, but pretty generally current. It is obvious, therefore, if a mode could be found out of modifying and regulating the sap, that the means would thereby be afforded of rendering almost every tree fertile. This however, is a problem, which has hitherto not been solved, though we may perhaps acknowledge, that some steps have been made towards it. It may be that the society, on looking at the translation alluded to, will think the attempt of Mr. Kempel, who is the writer of this tract, to be of this description, that is to say, to have contributed towards the solution. The manner of proceeding, which has been recommended by different persons, is various ; all agreeing in this point, that the flow of the sap ought to be checked. Old Henry Van Oosten, the Leyden gardener, whose book appeared, translated from the Dutch into English, in the year 1711, in a second edition mentions several means to be resorted to. One is, to transplant the tree frequently ; see p. 18. Another, to bore a hole in it, and drive in an oaken plug, which he says is the old way. But as the most effectual he considers the repeated pruning of the tree in summer, by which, as it causes the tree to bleed, the current of the sap is naturally weakened. Pruning would otherwise be deemed to add to the strength of the tree if it were done before the sap is in motion ; but in practising it from the month of April, when already much of the sap has been wasted, you lame, as he says, the luxuriance of the trees, by the wounds you inflict upon it. He rests upon the idea that a superfluity of sap produces nothing but twigs, and moderate sap produces fruit. Some of the modern gardeners are afraid of pruning a luxurious tree ; but while they entertain their fears, they are thinking of winter pruning, or early spring pruning. Marshall, in speaking of pear trees (p. 156. 4th edit. of the Intro-

duction to Gardening) observes, that their luxuriance may be checked, and fruitfulness promoted, by stripping off pieces of the bark, from the stem and the branches. He notices likewise, the practice of making notches, crosswise, in the bark, for a similar purpose. What is thus recommended for pear trees, may be applied to all other fruit trees under similar circumstances. Care should be taken in cutting the notches, that they do not reach the pith. Nicol (in his *Forcing and Fruit Gardener*, 4th edit, p. 240) suggests the expediency of cutting the roots of a luxuriant tree. That training has an effect upon fruitfulness, by operating as a check upon the sap, is generally conceded. Our old friend Van Oosten already was aware of this, though he does not seem to have made much application of this remedy; for, p. 11, he says, "A bough that is bent, commonly bears much fruit, but small, except it be bent from the beginning. The reason is clear, the pith of the wood runs crooked, and so its sap does not flow violently." Another method of checking the sap is mentioned in a paper published in our *Transactions*, vol. 2. p. 222. The whole seems to lead to this conclusion, that luxuriance in trees and fertility are at variance: and that the vigour which produces shoots and branches in abundance, is subversive of what we value more, namely fruitfulness. This growing principle must be moderated to answer the gardener's purpose. This may perhaps also be inferred from the circumstance that aged trees, or such as are in a weak, or even sickly state, are often very productive. I will not presume to account for these facts: but as facts I believe they must be admitted. Whether it be the abundance of the sap, or the rapidity with which it moves, that proves an obstacle to the formation of fruit, future observations may perhaps be able to decide. If we were to suppose the quickness of the sap's motion to be in fault, it might appear, that owing to a disproportionate activity, time was not allowed for the separation and decomposition of those particles, by which the fruit is formed. Some circumstances seem to point out the

abundance of the sap as the cause which is to blame; for several of the remedies above mentioned are directed against this fault, and are said to be efficient to the purpose of fertility. It may be added that transplanting is beneficial to many vegetables, besides trees, and improves their fecundity and good quality; and this is most readily accounted for by modification of the growing principle thus brought about. Moreover, it is sometimes found, that by confining the roots, for example, by narrow vessels, as by what is commonly called under-potting, the plants prove more fruitful; continued observation and attention may, at last, bring us to satisfactory results.

In adverting to the particular method, practised and recommended by the author before us, let me remark, that his practice of *ringing* trees, coincides exactly with that described by John Williams Esq. in a paper read before this Society May 3d, 1808, and printed in the first volume of our Transactions, p. 107. Mr. Williams does not call it *ringing the bark*, but *making annular excisions in the bark*, which is the same in meaning. Both, however, follow nearly the same plan, in cutting circles on the bark, with this difference, that Mr. Williams has only applied the operation to *vines*, and Mr. Kempel to several other sorts of fruit trees, though the former intimates, that he thinks it may be applicable to fruit trees in general. It is curious that both authors seem to have been impressed with the idea that they were discoverers of that method, and it is interesting to see how they both met in the same road. The German writer observes, that the proper size of his bark-ring is a *quarter of an inch* in width. Mr. Williams relates, that he made his annular excisions first an inch broad, but he found, in the succeeding year, that the vines which had undergone that discipline, did not push freely, and seemed to be injured. The alburnum had been too much exposed. He therefore reduced the rings to between one eighth and two eights of an inch in width, which

is very nearly Mr. Kempel's dimensions, and the trees did well. Those vines were in the open air; to such as were in a forcing house, and sheltered from the weather, it did not seem to be prejudicial to make the excision wider, for the bark likewise was in those houses more quickly reproduced. Mr. Williams lays a particular stress upon the entire removal of both the outer bark, or *cortex*, and the inner, *liber*, in making those rings; for if you leave any part of the latter, the bark forms soon again, and all your trouble is lost. Mr. Kempel, likewise inculcates it as a precept, that both the outer and inner bark must be entirely stripped off so as to leave the wood, or *alburnum*, perfectly bare. They both state, that the fruit in consequence of *ringing* or *annular excision*, becomes much larger; and Mr. Williams adds also, better flavoured, and that it ripens more quickly. He explains these effects by Mr. Knight's theory of the downward circulation of the sap; Mr. Kempel attributes them to a retarded motion. There is a very important consequence, which the latter gentleman states as resulting from his operation of ringing, namely that you may force young trees to show fruit, before they otherwise would do. This really is exercising great power over nature, if experience should bear out that position. One might doubt it, as it is an opinion commonly received, "that in young trees, which have sprung from seeds, a certain period must elapse, before they become capable of bearing." Thus our President thought, according to what he has expressed, p. 39, Transactions Horticultural Society, Vol. 1, where he adds, that he believes that period cannot be shortened by any means. Pruning and transplanting, he says, are both injurious: whether he will be induced to attribute a more favourable influence to the operation of ringing, must depend upon the degree of confirmation, which Mr. Kempel's assertion may receive from farther experiments.

I remain, Dear Sir, Your obedient Servant,

G. H. NOERDEN.

Albany, Picadilly, December 16th 1816.

P. S. Since I wrote the foregoing letter, I have, through the kindness of our worthy Secretary, Mr. Sabine, received some additional information, which I will beg leave to sub-join. Mr. Sabine observes, that the mode of stripping a portion of bark, in the shape of rings, from the branches of trees, for the purpose of curing their bareness, has been known and practised, for some time, in England, and commonly been denominated by gardeners, *circumcision*. But he intimates, that it had been confined to *pear trees*, and also states, that the ring was generally cut rather wide, and that the branches, though they bore fruit, were essentially injured by the operation, and ultimately perished. This effect unquestionably ensued from the misapplication of the remedy, in taking off too great a quantity of the bark, and thus reducing the tree or branch to a state of exhaustion, instead of merely checking, and moderating its vigour. It seems, therefore to have been only a practical manipulation, known among gardeners, of which the reason and general principle was not understood. This is, moreover, apparent from its having been usually applied to no other than *pear trees*. Perhaps, the frequent barrenness of these trees, arising from a superabundance of sap, was the cause why they, in preference to other trees, were subjected to that operation. I have mentioned, that Mr. Williams tried it upon *vines*, but though he hints at it, as no improbable idea, that other trees might perhaps be equally benefitted by the process, he was not aware of its efficacy in general. We know, at present, on the authority of experience, that it has answered with *pear trees*, *plum trees*, and *vines*; and combining this with general reasoning, I think, we cannot be wrong in concluding that it will in a similar manner, be advantageous to *all* fruit-trees, whose unproductiveness is judged to be owing to an exuberance of sap. The unskilful way, in which it has been practised upon *pear trees*, involving frequently the destruction of the

tree, rendered the expediency of recurring to that remedy problematical; and it seems that nobody in this country, before Mr. Williams, reflected upon the means of preventing the injurious consequences, which were apt to follow. Yet the cause appears obvious; but so does many a truth, when it is once discovered.

The dimensions which both Mr. Williams and Mr. Kempl assign to their rings, as best answering the purpose, nearly approach to one another; and they may be taken as rules to go by. But it is not to be said, that no deviation from them should be allowed; on the contrary, it may be advisable to vary, according to the comparative strength of the tree, and the quantity of sap, with which it may be presumed to be filled. The ring should never be made so wide as to defy the effort of the tree in again covering the wound, during the season; for that deduction of fulness, which is adequate to make up the loss of the bark removed, seems just to place the tree in that medium of vigour, which is favourable to the production of fruit. Mr. Sabine has farther favoured me with an account of a *pear tree* at Kew, which I will transcribe in his own words. It will be seen, that the remarks made before, are applicable in this instance. The partial decay of that tree is attributable to the manner in which the operation has been performed. "There is a *pear tree*," says Mr. Sabine, "against one of the walls in the kitchen garden, belonging to his majesty, at Kew, which underwent this operation about fifteen years ago. The part operated on was near the root; and as it was a principal arm, about one half of the whole tree, became influenced by the operation. This half has uniformly borne fruit, the other has been nearly barren. The portion of stem, which was laid bare, is about six inches wide, and it has not been again covered by bark. That part just above the ring is considerably larger than the part below it. The ends of the branches appear in much decay, and there are but very few young

shoots thrown out from the sides, whilst on the other part of the tree, the shoots as usual, proceed from the extremities as well as from the sides of the main branches. I apprehend from the present appearance of the whole, that the portion of the tree, which by the separation of the bark, has been deprived of supply from the root, cannot survive many years."

OBSERVATIONS ON, AND DETAILS OF, SOME EXPERIMENTS IN RINGING THE BARK OF FRUIT AND OTHER TREES AND PLANTS. By JOSEPH SABINE, ESQ. F. R. S. &c. SECRETARY. READ MARCH 21, 1820.

THE publication of the papers, on *ringing the branches of fruit trees*, by Dr. Noehden, in the second volume of the transactions, has directed the attention of several Fellows of the Society, and other persons, to the subject. The results of these experiments, which have been communicated to me, appear to be of sufficient importance to be collected together; as they will serve as guides to those who may wish to make further trials, and will assist in ascertaining the causes, of the variety of effects, which appear to attend the operation on different plants.

The practice of ringing, or circumcising the branches of fruit trees, in order to make them yield more produce, is not novel; it is not stated to be so, in the papers alluded to; but though occasionally used, it does not appear that much enquiry has been made, to discover the most advantageous method, or the proper seasons, for performing the operation, nor have any reasons been distinctly assigned why it should be so particularly successful in some instances, and so entirely devoid of benefit, in others. The production of a greater crop of fruit, is the most important of the advantages expected to ensue from ringing: this increase must, of course, arise from an additional number of blossoms, and in some cases, from blossoms, that would not

have existed in the ordinary course of nature, without the intervention of ringing; the formation of flowers, is therefore, the point to be looked to, in considering the application of the practice. In those trees where the blossom buds are produced on the wood of the preceding year, it is not to be expected that the operation will have any effect on the quantity of produce, in the year, in which the rings are cut; and it is on trees of this character, that ringing has been chiefly practised. On the contrary, in those trees which produce the flowers on the present year's wood, (though not much has yet been learned from experiment, with respect to them) the effect of the ringing will be seen immediately.

The interruption of the passage of the descending sap, by the incision in the bark, causes, in some cases, an alteration in the quality and appearance of the fruit. In many instances, in the first produce after the operation; it is considerably increased in size, on the ringed branches; it is also ripened earlier in the season, and that circumstance is accompanied, with very extraordinary improvement, in those colours of the skin, which indicate full maturity. Taking therefore into consideration the expectation of a change both in the quantity and quality of the fruit, it will be obvious that the spring is the most proper period to cut the rings; the bark is then very readily detached, and the work may therefore be done with greater ease at that season. With respect to the width of the incision it must be recollected that the separation of the communication of the bark, in every case, though in some more than others, materially affects the health and vigour of the branch. As long as the separation is kept up,* so long may the formation of

* Since this paper was read to the Society, Mr. Williams, of Pitmaston, has mentioned to me, that a ligature on the branch, by a waxed string tied tightly round it, early in May, produces nearly the same effect of ringing. In this case, although the downward flow of sap, from the leaf is in some measure prevented, the alburnum is not injured by exposure to the air, and

additional blossom buds be expected : but the restoration of the communication, which will be the consequence of the union of the bark, from the opposite sides of the ring, puts an end to the whole of that unnatural process, which the interruption had occasioned. It is therefore requisite, that the bark should be separated, nearly the entire season, in which the ring is made, more especially in those trees, where an increase of the succeeding year's bloom, is intended to be produced ; but it is not advisable, in any case, to keep the ring open for a long period ; the deposit of alburnum, at the upper edge of the ring, caused by the stoppage of the passage of the descending, sap increases the size and weight of the branch, in that place, so much, whilst the under part, remains of its original size, that it is very liable to be broken short off, at the ring, if the bark be suffered to remain long disunited.

Having taken this general view of the subject, I proceed to the consideration of the application of the practice to the different kinds of fruit trees, as far as my own observation, or the experiments of those with whom I have corresponded relative to it will enable me.

All apple trees form an abundance of additional flower buds, in consequence of ringing ; but if the ring be wide, the ringed branches, especially young ones, speedily become sickly ; it is therefore advisable, with them not to cut rings of greater width, than what will be closed up, at the end of the same season, or early in the following year ; besides, it seems that the improvement in size and beauty, is obtained chiefly in the first year of the ringing, therefore the rings of apple trees certainly should not exceed a quarter of an inch in width, on strong branches, and they should be narrower on small and weak shoots. Fresh branches on the same tree, ought to be annually ringed, and thus a succession of produce be uninterruptedly kept up.

there is less obstruction given to the ascending sap, so that the health of the branch is preserved.

Mr. Twamley of Warwick, exhibited, to the Society, in the autumn of 1818, some specimens which fully illustrate the practice of ringing apple trees. In the spring of 1818, he ringed several espalier trees, some of which were the Minshall crab, the Court-pendu apple, and the French crab; the two former produced some of the most remarkable specimens of the kind, from the ringed branches, as to beauty, which perhaps were ever seen; the colours being most brilliant, whilst the apples from the unringed branches of the same trees, had their usual appearance; but the *size* of neither of these kinds was altered, whilst the French crabs from the ringed branches, were enlarged in an extraordinary degree, 'as well as improved in appearance. The same trees in 1818, had borne great crops on every branch, whether ringed or unringed; but in 1819, they did not produce a single apple, except on the ringed branches, which then afforded a good crop, but the fruit, though very beautiful, were not so splendid in appearance as in the former year, and the French crabs were not larger than usual. Mr. Twamley has observed that the rings made in horizontally trained branches do not so readily close up as those on upright growing ones; and he found an advantage in protecting the exposed part of the wood at the ring with grafting clay. Mr. Hunt of Stratford-upon-Avon, having observed Mr. Twamley's success, tried the same experiments with trees in his own garden, in 1819, particularly upon the Ribston pippin, the nonpareil, and scarlet nonpareil. He made his rings a quarter of an inch wide, at the end of April and beginning of May, and in the winter covered the open rings with clay and cowdung. The Ribston pippin filled up its rings more rapidly than the other kinds: in consequence, as I suppose, of its being more vigorous in its general habit. The fruits of all in comparison with the produce from the unringed branches, were, exclusive of the additional quantity, either altered in size or in colour, but did not keep so well: and Mr. Hunt thought them inferior in flavour, which is the natural consequence of

the increase in size. The Ribston pippins, from unringed branches, were of a pale greenish yellow, and averaged eight inches in circumference ; those from ringed branches, were of a rich golden colour, with brilliant red streaks on the exposed side, and were ten inches in circumference. The nonpareil tree, (usually called the green nonpareil) was trained to a wall, and its produce, consequently, was all large ; but those from the ringed branches, were highly improved in colour, and measured twelve inches round. In the scarlet nonpareil there was no difference in colour,* but those from ringed branches, measured ten inches in circumference, while those from unringed branches measured only eight.

Pear trees do not suffer so much from ringing, as apple trees ; the ring, though kept open, does not appear to induce weakness, so speedily : the ringed branches do not make shoots in such numbers, nor in such vigour, but they retain their health, sufficient for all purposes of produce, many years. Indeed, so little injury is done to pear trees by ringing, that several branches can be kept cut, at one time, without danger, and a continuance of crop, may be ensured, by occasionally taking out a branch which may have become decayed, and replacing it with new wood. In healthy and clean shoots, the bark of pear trees, soon restores itself over the ring, unless it is cut very wide. The effect of ringing them is a certain production of blossom buds, so much so, that even young trees may be brought into bearing, by this means. Mr. Twamley, in the spring of 1818, ringed a branch of a young and luxuriant Jargonelle pear tree, which had been planted only two years ; the ring closed itself at the end of the summer ; but the branch next year blossomed and brought to perfection four good pears, (shooting vigorously also) when no other part of the tree showed the least appearance of bloom, and even in the present spring it shows

* The scarlet nonpareils from ringed branches, in Mr. Twamley's garden, were, however, much more brilliant in colour, than the other apples on the same tree.

two branches of blossom, which are the only ones upon the tree. Mr. Kempel mentions that he had increased the size of pear trees by ringing : this is most probable, but an instance of it has not occurred to my observation.

The branches of plum and cherry trees sustain injury and become cankered by ringing; but as they are always free blowers, an increase of blossom by artificial means is not wanted to make them produce fruit. The same observation is applicable to peach and nectarine trees; so that all the stoned fruits cultivated in this country must be excluded from the list of trees on which ringing may be usefully performed.

Vines are much benefited by ringing; their blossom is produced on the shoots of the same year, in sufficient plenty: for additional blossom, the use, therefore, of ringing, is not required, but increase of size, early ripening, and improvement of flavour in the grapes, all result from ringing. Mr. Williams, in a paper on the subject, in the first volume of the Transactions, has sufficiently described the mode of proceeding with the vines for this purpose.

In none of the experiments, the termination of which I have yet become acquainted with, has success attended the operation of ringing the Fig tree. The branches which have been circumcised have put forth on the young wood, abundance of small Figs, such being in fact, the flower of the tree, which subsequently enlarges and becomes the fruit, when ripe. This production of fruit has even been effected, in trees which had not attained sufficient age to throw it out naturally in the regular course, but in such cases, the crop has fallen off, without ripening. The branches of the Fig tree suffer by ringing; the incision should, therefore, when made, be very narrow, to admit of speedy closing, it not being necessary for the production of the blossom, (which is formed on the young wood,) to keep it so long opened, as is required in other fruit trees.

The preceding are all instances of the effects of ringing in the production of fruit: but as these incisions in the bark cause the formation of flower buds, when none, or only a few, would otherwise have appeared, the practice may be extensively and usefully applied to ornamental shrubs and plants, which do not readily blossom. I believe this use of ringing has not before occurred to the advocates of the practice, and as I am acquainted with some cases of perfect success, it will be worth while to enumerate them, in order to induce to further trials.

Mr. William Baxter, gardener to the Comte de Vandes, at Bayswater, has given me the particulars of three experiments, made in the spring of 1818, which fully answered his expectations. The first was with a Waratah Camellia, which he had never been able to make flower; he cut a ring round the stem; so close to the root, that he was able to cover the incision with the mould of the pot, in which the plant grew; the ring closed at the end of the year, and the plant remained in good health, but made rather short shoots, on which an abundance of flower buds were formed, and these blossomed perfectly in the following spring. The second experiment was on a plant of *Aubletia Tibourbou*, in the stove; the ringed branch speedily broke into flower; it was the first blossom which the plant had yielded, but its other branches did not blow; the ringed branch is still alive, and its bark nearly reunited. The third experiment was on branches of *Pyrus spectabilis*; those which were ringed produced last spring, abundance of splendid flowers, which were succeeded by ripe fruit; and they are now again full of blossom buds, the other branches showing little promise of bloom.

In addition to the above, I can state, that one branch of the *Passiflora alata*, in Messrs. Loddiges' stove, was ringed, in 1818; in two months after it produced flowers; it also did the same abundantly last year, whilst another branch which remained unringed, was entirely unproductive, in

both seasons. Mr. George Loddiges, in giving me this account, mentioned, that he had tried the same experiment, with other *Passifloras*, and with some stove plants, but that he had not succeeded. His failure may probably in some cases be attributed to his having made the rings too narrow: in the soft stemmed plants, which he ringed, the bark would reunite very rapidly, and if the separation is not kept open, sufficiently long, the desired effect will not be produced.



DWARF INDIAN CORN.

[From the Transactions of the London Horticultural Society.]

A SPECIES of Indian Corn which can be raised in England and Paris can surely be made to succeed in Massachusetts, and we ought to have all the varieties of that plant, which will grow in our climate.—EDITORS.

“Some heads of a dwarf Indian Corn grown in the garden of the (Horticultural) Society were exhibited. They were produced from seed sent to the society (1819) from Paris, by M. Vilmorin, under the name of *Mais à Poulet*—a “Chicken Corn.” The plants do not exceed eighteen inches in height, are very hardy, not being injured by the Spring frosts—the seeds vegetate perfectly well in the open ground, and do not require the aid of artificial heat to raise them. They should be sown in drills, about two feet apart and the plants when thinned, should stand at six inches in the rows from each other. Their heads which will be perfectly ripe before the end of September, are about three inches long one only being usually produced on each plant; when a second blossom appears, it is generally abortive. The grains are of a bright yellow colour, round and small, and the flour they contain appears to be peculiarly white and fine. The varieties of the Common Maize, (the *Zea Mays* of Linnæus) are nume-

rous, and it is possible, that this may be a very dwarf and hardy sort, referable to this species—but it has been suggested that the *Mais à Poulet* may be the plant described by Molina in his Natural history of Chili as growing in that country, with a smaller grain, which furnishes a meal whiter, more light, and in greater quantity, than the common kinds of Maize. Molina considers his plant to be a distinct species, calling it *Zea caragua*, and distinguishes it as having its leaves senated or denticulated; the margin of the leaves of the *Mais à Poulet* is not smooth but edged with minute hairs which give a slight appearance of serrature. Should it be thought desirable to make the experiment, the perfect hardiness of this plant fits it well for field culture.”

So far proceeds the notice in the Horticultural Transactions and to those who are not aware of the coldness of a British summer it would not seem to be encouraging. In that climate they cannot ripen our Indian Corn without artificial heat, and therefore the variety above described may with us be of some value, in our cold seasons, and certainly an object of curiosity. We cannot agree with the writer in the Horticultural Transactions that it is probably the plant described by Molina, for they admit, there are no serratures on the leaves, and the hairs mentioned, as giving the appearance of serratures, are common to all the varieties of Maize, or at least, there is a roughness on the edges of the leaves, palpable to the eye, and touch.

We have some apprehension, that it is only the dwarf corn grown on the Missouri, or the small Canadian Corn—but at any rate we should invite M. Vilmorin, whose trees and plants have received most abundant encouragement here, to send us a few ears of it, and it is hoped some of our public spirited merchants in the French trade, will import it next fall.—EDITORS.

SOME SLIGHT NOTICES OF THE LARCH TREE—(PINUS LARIX,) KNOWN IN VARIOUS PARTS OF OUR COUNTRY UNDER THE SEVERAL NAMES OF JUNIPER—HACKMATAK AND LARCH. By JOHN LOWELL.

For some reason which I am unable to explain, this tree so highly valued in Europe, as a timber tree, and particularly for its durability, when buried in the earth, has never been thought of so great value with us. It grows more rapidly, than the *real* Juniper, commonly called the red Cedar, and is more durable for posts, than that plant. It will grow on any soil, and rapidly in soils entirely different from those, in which it is usually found. I have them growing, in pure sand, without the smallest apparent admixture of loam, and on barren gravel—a gravel, which will scarcely support grass. I have larch trees in such soils 18 to 24 inches in circumference, and thirty feet high, of thirteen years growth.

The English variety is more beautiful and vigorous than our own. Col. Pickering first called my attention to the difference. He has plants of the English larch, which he observed had *larger cones*, and a fuller and fairer growth and foliage.

That he was right, as he generally is, from the accuracy with which he examines subjects which fall under his notice, will be apparent from the following extracts from the horticultural Transactions of London.

HORTICULTURAL TRANSACTIONS.

“June 6th, 1820. The duke of Athol having sent to the Society specimens of five kinds of Larch grown on his estate in Scotland accompanied by observations on them, this communication was read. The kinds were

1st. The Common Larch (i. e. the Larch of Great Britain) with red or pink flowers. In the duke of Athol's plantations on mountainous tracts at an elevation above the sea of 1500 or 1600 feet, this tree has, at eighty years of age arrived at a size to produce six loads of timber, appearing

in durability and every other good quality, to be likely to answer every purpose, both by sea and land.

2d. *Pinus Larix*, from the Tyrol, with white flowers. This kind seems not before to have been noticed. It is very remarkable in its appearance from the whiteness of its cones, which in the specimen sent were erect, and not cemuous or drooping. The shoots are much stronger than those of *pinus larix* with red cones. The foliage of the two is similar.

3d. The weeping Larch, from the Tyrol. It is different from the *pinus pendula* or black Larch of North America. It grows to a large size.

4th. *Pinus Microcarpa*, (a small fruited or coned Larch) the red Larch of North America. There are some trees of this kind fifty years old on the Athol estates, but *they do not contain one third* as many cubic feet of timber as *Pinus Larix* at a similar age. (That is, the *English Larch* furnishes three times the quantity of timber in fifty years which our own common Larch does.) The wood is so ponderous that it will not swim in water. Its cones are much shorter than those of the *Pinus Larix*, its branches weaker, and its leaves narrower.*

5th. The Russian Larch. The appearance of the tree is coarser than that of *Pinus Larix*. it is of much slower growth, and its aspect is different from that of the other species. The bark is ash coloured. The leaves come out so soon that they are liable to be injured by spring frosts. The flowers are like those of the American Larch. It is supposed to be the *Pinus Larix* of professor Pallas, and was received under the name of *Pinus Sibirica*.

From this account it is plain, that it would be our interest and is a duty we owe to Agriculture, to import the cones of these varieties of Larch from Scotland, which we hope some gentleman acquainted with that country will do, send-

* In some of these particulars, the differences noticed by Col. Pickering agree with the statements of the Horticultural board.

ing this description with directions to see that the varieties are all obtained.*

Before I close this article, I beg leave to call the attention of my brother farmers, to the success, which has attended my planting of small patches of forest trees. It is not that this success has been greater in the whole, (though every one who passes along the high road must perceive it has not been less) than that of other gentlemen but it is in one or two respects very remarkable, and exceedingly encouraging to that class of intelligent *farmers*, not those who cultivate for ornament, but those who do it for gain, on for subsistence.

Having but little land, and of that little a small proportion which was good, I was reduced to the necessity of planting my trees wholly on barren and unproductive soils. In 1807 and 1808 and 1809, I planted with forest trees from two to three acres of this land, one half of which was pure sand with so little mould or loam as not to admit of the growth of grass for the scythe. Its whole value per annum was not 10 dollars. This land I covered with forest trees, the White Pine, the Larch—the Fir Balsam, and in the better parts, the Oak of various sorts, the Maple, the Beech, the Ash, the Elm, the Locust, the Spruce, the Spanish Chestnut, and some few others for variety.

The land was about half of it ploughed and kept open with potatoes for 2 years and then abandoned to the course of nature. The pines were taken up out of the forest with great care, not more than 5 feet high. Wherever I had the cupidity and impatience to introduce a larger tree I either lost it or it became sickly. In some places I planted acorns, and as to my hard wood forest trees, transplanted from the woods, finding they looked feeble and sickly when they shot out, I instantly sawed them off at the ground or near it.

* The cones of the Larch will probably be ripe in November, and should not be taken off before that time. The seeds should be planted as soon after they arrive as possible, or early in the spring.

This required some resolution, but I have been abundantly paid for it.

The result of this experiment is this, that in a period from 13 to 15 years I have raised a young, beautiful and thrifty plantation comprising almost every variety of tree which we have in Massachusetts, which are now from 25 to 35 feet high, and some of which, the thriftiest white pines actually measure from 9 to 12 inches diameter. The loppings, and thinning out of these trees now furnish abundant supply of light fuel for summer use, and upon as accurate a calculation as I am able to make, I am convinced, that the present growth, cut down at the end of fourteen years from the planting would amply pay for the land at the price it would have brought. I do not mean to say, that this would be the case in the interior, but in the vicinity of Boston and of Salem, I am sure this experiment may be tried with perfect success. In Chelsea, Lynn, Cambridge, West Cambridge, some parts of Brooklyn, Wenham, Danvers, and many other old towns, I see tracts of land which can produce but little, of any value, and which would in fifteen years, at the expense of ten days labour for the first four years on each acre, produce trees that would be worth the present price of the land. I am persuaded, that this is no loose calculation. Of course, I say nothing of the effect, which such a system would produce on the appearance of the country—on the improvement of the landscape—these considerations are too remote from the views of farmers to have much weight, but they may think it of some importance, if we prove to them, that if at thirty years of age they should plant in these old towns, now dependent on foreign supply ten or fifteen acres of wood, it will be worth more 30 years after, than the best 20 or 30 acres of their farms, and in some instances, near the great towns, the sale of the wood would equal the value of their houses, barns, and stock. If wood and timber should increase in price, the next 30 years as much as it has to my knowledge, done within the last 30, which is 150 per cent.

it will do more than is above stated. I hope I shall be excused for recurring again to a topic, which I have so often urged upon our farmers, and my excuse must be, that I have perceived, that in all the European countries, timber and wood for fuel are among the most interesting topics of discussion, and lands producing them are considered the surest, safest, and most profitable estate—more so than money in banks, or at compound interest. No state in the union is in more danger than Massachusetts of suffering from a scarcity of wood for timber and fuel, and as the neglect of planting cannot be remedied within a third or half a century, I think it the duty of a faithful Centinel, intrusted with an agricultural publication, to give constant and repeated notice of the danger.

I owe it to the cause of truth, to state, that I committed a very grave and important mistake in planting. From the desire to cover my land more rapidly, and to thicken my plantations for ornament, I planted my trees too near each other. I now suffer from this very natural cupidity. I cannot thin them out without hurting the beauty of the landscape, and the trees shew how much they suffer by the yearly loss of their lower branches, which will always die if they have not air and moisture, and like other misers, I find myself unwilling to part with the treasure I have possessed.

This however will not apply to the farmer who raises from a desire of profit. His trees should be placed at least twenty-five feet asunder in every direction, he will not fear, as I have done, the use of the axe to thin out his trees. I could now cut out light fuel for the supply of my family for two years, without injuring my plantation, but I have not courage to do it.

I am aware, that two objections will be made to this statement—First, that the scale of experiment was a small one, not exceeding two acres and an half. It is true; but the experiment was sufficiently large to test the utility of the measure. Secondly, that I disregarded expense, and put

down the cost to the score of luxury. This is not true ; I am sure that the whole labour did not exceed twenty days work of one man on an acre, and with respect to one acre of it, not five days labour (in the whole) of one man, has ever been expended upon it.

I planted the trees in two or three days, and left them to their fate ; but I consider two conditions, indispensable to success. First, that as to pines of all sorts, and other ever-green trees, they should be put out not more than four years old ; *not pruned* for they will not bear the knife well. Secondly, That as to hard wood forest trees transplanted from the woods, they should be instantly cut down to the ground or near it.

It is only because we have no nurseries of forest trees in New England, that I speak of the barbarous practice of transplanting and instantly heading down. Young trees from a nursery would in all respects be preferable.

[To the Corresponding Secretary.]

DEAR SIR,

SUBJOINED you have some observations in relation to the treatment of young fruit trees, and the effects produced by grafting and budding them in the nursery and garden, and showing the good or bad results agreeably to the choice which may be made of the scions which are used for this operation. Although they are by no means new, or in any degree original, yet from the forgetfulness of some, want of information in others, and carelessness in many, these rules are omitted in many cases to the great injury of the proprietors of orchards and gardens.

I am sorry to say that in many instances the evil begins in the public nurseries where men ought to know this branch of their business above all others ; but as many nursery men raise trees merely to sell, and care but little what becomes

of them after they get out of their grounds, the greatest negligence is observable in their treatment of young trees, which are grafted or budded from any young thrifty tree which they consider of the sort they are in want of; and as the most vigorous shoots will take with most certainty, these are usually employed for the purpose. The subsequent treatment of the stocks is no less injudicious, as dead wood is generally left above the bud, and round the graft, by the hasty and inattentive manner with which the knife is used; hence arises, in many instances, the lapse of years before we get our trees to bear: hence arise the canker and gum which we find in almost all trees taken from public nurseries.

Private nurseries are not subject to the same evils, because there are fewer stocks to attend to, and more labour and time allowed to the portion of work to be done; but even here the same defects are often seen. Although many gentlemen who have abundance of knowledge on this subject, and who are in the habit of attending to their nurseries themselves, may think these remarks superfluous, yet there are some who may be benefited by them.

It is for you, however, to determine whether they are worth a place in your Agricultural Repository.

The health, habits and fruitfulness of a tree depends upon the habits it receives in the nursery.

First. The health of the tree depends in part on the soil of the nursery, which should be free from manure, and as nearly a good virgin soil as possible. This soil will give sufficient nourishment to the plant without forcing it into luxuriance; and when it is transplanted from the nursery it will not be checked in its growth if the soil into which it is put has never been manured. Young trees are more healthy by being put into pure natural earth than if manured; and when age and decay come upon them they will feel the benefit of this stimulus, if applied, with more effect.

One of the principal causes of ill health or canker in young trees taken from nurseries is, that the nursery men seldom

take the trouble to cut off the wood above the bud close to its shoulder, leaving a smooth and sloping surface. If they were to do this the wound would heal the first season ; but they usually leave a small piece from which the top has been *sliced* off without care or reflection half an inch above the shoulder of the shoot or bud, and of course beyond the reach of the sap which issues from it, and from the edge of the live bark to cover the cut. This piece of wood dies, and it will soon communicate its disease to the sound bark and wood, until the evil is beyond the reach of the knife.

Second. The habits of a tree depend in a great measure on the quality of the scion or bud which is put into it, and on the direction given to its branches in the training and pruning them.

The scion or bud should never be taken from a tree that is unhealthy, or that is not in bearing ; and the strong and luxuriant shoots should always be rejected. It is even better never to take them from a tree that is very luxuriant in its growth.

If it be an apple, or pear tree, select your scions from the end, or near the end of the fruit bearing branches. The buds of the shoot should be plump, full and healthy. The middling sized scions are the best. The young tree will assume the character of the scion which is inserted into it, and will grow moderately or otherwise ; fruitfully or barren, according to the judgment used in selecting the scions and pruning its branches.

If it be a peach that you are to bud, take the fruit bearing shoots of a moderate size with double and triple buds. These will put out blossoms in the spring, which may be rubbed off when the wood bud has opened, and the second year your tree will show fruit. Whereas trees grafted or budded from strong gluttonous shoots grow vigorously for many years without giving the cultivator any returns for his labour. I have trees, both pears and peaches, in my garden, which were taken from a public nursery more than ten years ago,

and which have always been growing with rapidity, and in apparent good health, but which never produced me any fruit; and I have others which I have budded myself, which have been constantly in bearing from the second summer after the insertion of the bud or graft. This variance I attribute entirely to the difference in the qualities of the scions or buds.

Third. There is no doubt that the quality of the soil contributes also very powerfully to the fructification of fruit trees. Different fruits require different soils to make them perfect in their kind; as the Doyenné, or Saint Michael pear produces best in a gravelly soil, while the brown Beurré requires a more nutritious earth and a more sheltered situation to bring it to perfection. But as a general rule, it is better for young trees to be placed in a good, but not a rich soil; as the fructification will be retarded by too rapid a growth: but the fecundity of the tree may be effectually secured by a judicious choice of scions, and a healthy virgin soil that is light and warm. Yours, &c.

A NORFOLK GARDENER.

BAD WINTER KEEPING OF COWS.

[To the Corresponding Secretary.]

Roxbury, May 25, 1822.

DEAR, SIR,

I HAVE been more immediately led to this subject by having within a few days past visited a number of farms within ten miles of Boston. The too general practice of feeding cows in the winter with only meadow hay, (which has less nourishment than good straw) because they cannot sell it and have plenty of good English hay which goes to market, is I think very bad policy. If meadow hay must be used *in part*, let it be *salted* when put in the barn, and fed in racks, in the yard by day, and *good hay*, with vegetables of almost any kind in the barn, night and morning, and if bran

or oil cake meal can be procured, both of which generally may be had at reasonable prices, they ought to be freely used, even though the cow should be dry.

I had myself an instance of the good effect within three years past, having purchased a high priced and very fine cow, in the autumn, which I put out for the winter, in as good hands as any farmer in the country, to be fed as his own stock were; the whole summer, after coming home, though in good pasture, she never gave more than five or six quarts at night milking, the next winter she was kept at home, when she was well fed with *good hay*, and mangel wurtzel, Swedish turnips or carrots once a day, (*though dry*) and the whole of the next summer she gave from eight to ten quarts at night milking, and has continued ever since, in the summer season, by the same treatment, to do equally well.

Let the meadow hay be used freely for *litter* and the animals be carded or curried; by keeping their skins clean, I am satisfied they enjoy better health; and will consume less food—besides the pleasure of seeing them so—only observe the miserable state in which a large proportion of the cows you meet about the roads appear, going to or from pasture, night and morning—or indeed a large number that get their only subsistence on the road sides and occasionally breaking into enclosures, where they see good feed, to the great annoyance of neighbours, and contrary to the laws of the state, as well as the bye laws of the towns.

I think it of more importance than is generally believed, that the *male* to which the cow is sent, should be of a really good breed, even although the calf is not intended to be raised—the veal will be better, and I believe there is no doubt also, it has some effect on the milk for the next season.

By the treatment before mentioned, I doubt not most farmers that now keep 10 or 12 cows in the common way, by selecting *one half* the number of their richest and best mil-

kers, would make more butter than they now do, and there is also no doubt, that the manure of well fed animals is infinitely superior to that from mean fed ones—and I believe the quantity would be as great as from double the number.

We often see in large families where only *one* cow is kept, and that one well fed and attended to, that she gives an abundance of milk and cream, and also makes 6 or 8 pounds of butter per week, it is not so much owing to the qualities of the cow, as the care and attention of keeping her well fed and regularly and thoroughly milked.

I really wish our farmers generally, would be prevailed on to raise a greater quantity of vegetables for the use of their stock, than they have been in the habit of doing. Swedish turnips and Mangel Wurtzel (of the true sorts) are very easily raised, and every farmer has land suitable for them, when he might not have suitable soil for *Carrots*, which I think give the richest milk, but are much more expensive in cultivating. These roots with care, even in pits, out of doors, may be preserved till May and June, and yield generally double the quantity that the same land would yield in potatoes. Indeed with me I have usually had more than three times as many bushels per acre, and with I think no more labour. Mangel Wurtzel indeed will by their thinnings and trimmings, if done with care, pay all the labour of the crop, and give a fine evening food for the cows, and is also an excellent food for swine.

A small patch of corn *broadcast or in rows*, and cut after it gets two and a half or three feet high, will give a fine evening food for cows, by cutting it at about one foot from the ground, it will grow again for another crop.

I am dear Sir,

With much respect,

JOHN PRINCE.

[The statements of the unsuccessful candidates for premiums, whose crops fell in some degree, short of those, which obtained premiums, with the account of the culture.

It is not enough to grant a few premiums, limited by our small pecuniary means. The interests of agriculture require, that we should shew that the premium crops were not extraordinary, were easily attainable by all, were in fact almost equalled by others. It is by convincing our farmers, that good culture *generally* will receive its own remuneration, and not by shewing them that *one* man, at great expence, has raised a great crop, that you can hope to improve our agriculture at large, and to induce all to do their best :—when you can shew, that men in various counties, possessing no peculiar advantages, have at the same moment arrived at nearly the same result, you produce a more settled and rational conviction of the benefits of good cultivation, than you could do by any course of premiums. For this reason we shall publish the letters of the unsuccessful candidates, [not in fact unsuccessful,] but who were surpassed by one or two others. They may indeed have been the most skilful, but a little difference of soil, or a shower or two in summer on one estate which was denied to another, may have produced the difference.]

EDITORS.

Westford, Dec. 5, 1821.

To the Chairman of the Committee on Agricultural productions.

DEAR SIR,

I FORWARD you by the bearer a statement of the course pursued with a piece of land of one acre, as to a crop of corn, and have here enclosed the statement of the amount.

The ground was a piece which had been laid down and mown six or seven years. I ploughed it late in the fall of 1819 and in the spring of 1820 I planted it with corn and manured it only in the hill with compost, from which I had a decent crop of corn. Early in the spring of 1821, I ploughed the ground coarsely, and spread eighteen or twenty cart loads of coarse manure, then harrowed, and then ploughed the ground very fine, and on the 20th of May planted it in rows, the kernels about nine inches apart, and the same quantity of manure in the rows as I spread, which was a composition of horse, hog and door manure. The first and third time of hoeing, I hoed without ploughing; the second

time I ploughed and took from the stalk all the suckers which came out next to the ground. The corn growing exceedingly rapid, I followed cutting all the stalks which did not set for ears, and those which grew smutty. The corn was a twelve rowed kind, which I have raised a number of years, and more forward than my neighbours generally, and I know of no improvement which I could make except in the furrowing. This season I drew my plough but one time in a row, the ground being stoney, and putting the corn on top of the manure made the row too high; whereas drawing it twice would have made more room for the manure, and laid the roots lower.

If my efforts should merit any encouragement from the Society, it will be gratefully received by

Your most obd't serv't. SAMUEL WRIGHT, Jun.

NOTE—Mr. Wright's crop was 78 bushels and 5 quarts of Indian corn on one acre.

Salem, November 15, 1821.

To the Committee on Agricultural productions.

GENTLEMEN,

IN compliance with the Society's regulations, requiring each claimant under the head of agricultural experiments, to state the quality and general cultivation of the lot, the previous season to that on which a claim is made for the society's premium, I offer the following, with a claim for the society's premium for raising the greatest crop of Carrots on an acre.

The land is situated in Salem, county of Essex; has been broken up about four years; was planted the past year with onions, beets and carrots, ten loads of mixed mussels, bed, rotted potatoe tops and barn manure being put on; the soil black and heavy.

The present year eight loads of privy manure, for one yoke of oxen, were put on, spread in four hours, and sown with about one pound of seed: 19th of April the lot was ploughed; 11th May, one day sowing; 11th and 12th June, four days weeding: 9th July, two days weeding; 16th and

17th July, forking ; and from 26th October, twelve days labour in digging, measuring, weighing, &c. in all twenty-two days and four hours labour.

The quantity produced on the acre was five hundred and twenty-eight bushels, which at forty-seven bushels (being very well cleaned) to the ton, gave 11 ton, 4 cwt. 2 qr. 20 lb.

Respectfully, your humble serv't.

JOHN DWINELL.

Roxbury, 30th November, 1821.

To the Committee on Agricultural productions.

GENTLEMEN,

HAVING raised a considerable quantity of vegetables the past season for consumption on my farm, which being small, the house lot only 57 acres, and keeping a large stock for the size of the farm, induces me to raise largely of roots ; the quantity however is much smaller than I had last season, from the same quantity of land under cultivation, owing I suppose to its being principally from pasturage newly broken up.

300 hills of summer squashes (on less than $\frac{1}{4}$ acre) which yielded largely, and were daily gathered for a long time and boiled for a large stock of swine, with the thinnings of Mangel Wurtzel, &c. &c.

356 bushels Mangel Wurtzel at the harvesting, besides a large quantity of thinnings during the season, and also of leaves at harvest given daily to cows, swine, &c. cost 7 cents per bushel. I think a greater quantity of this root can be raised on suitable soils, than of any other vegetable, requiring not more than one third of the labour that *carrots* do.

400 bushels carrots—on same space of ground adjoining the preceding crop ; cost $17\frac{2}{3}$ cents per bushel.

537 bushels Ruta Baga. Three fourths of them were raised on land broke up this year, and the sods burnt by an Irishman well acquainted with the business, and no other manure on the three-fourths, calculating his wages and fuel, with the labour on the crop otherwise, the

cost is $8\frac{2}{3}$ cents per bushel—were sown 29th June, too late by a fortnight, but the land could not be got ready sooner.

- 745 bushels potatoes besides early ones used during the season. They were of thirteen different sorts, (none of them had been cultivated by me more than one year before; most of them were new to me this year) for the purpose of selecting the most valuable. The best were the *Elam* potatoe, from Rhode Island, and are uncommonly fine. The second best from General Derby, of Londonderry, N. H. and supposed to be the Buckman potatoe from Maine, a new sort. The third from Hamburgh, imported by T. B. Wales, Esq. are very fine, and yield well. There being so many sorts, and planted on so many different spots, it was impossible to keep the costs.
- 15 bushels sweet potatoes of very good quality, and the cost of cultivation not more if so much as others; they yield more from the same number of hills, and do best on light sandy land.
- 37 bushels Russian radish—the produce as large as any vegetable I ever raised; some of them weighing fourteen pounds. They keep very well through the winter; cattle are very fond of them, and the thinnings were boiled among other vegetables for swine. I think their cultivation should be encouraged. General Derby at L. has this year raised more than one thousand bushels altogether on his corn hills (one each) and he thinks it no injury to the corn. They do not seed the first year, like other radishes, but must be cultivated like turnips.
- 400 bushels turnips of different sorts; some the yellow Aberdeen, from Mr. Young of Halifax, thought to be the best of any for the table, and keep well; some red tankard and white Norfolk. All were *imported* seeds, and not sown till the last of July, and principally on

burnt soil. I find when *English* turnip seeds are used, they should be sown from two to four weeks earlier than our own old fashioned sorts, as the tops grow very large, and the roots do not begin to swell till the tops are nearly done growing.

Cabbages, a considerable quantity, but did not head well; the soil too dry for them. Besides a considerable quantity of vegetables from a large garden, not more than two hundred bushels have been, or will be disposed of otherwise, than for the use of the farm. Last winter I kept in pits near one thousand bushels of *Ruta Raga* and *Mangel Wurtzel*, which did so well, that this season I have nearly as many. The trench dug about one foot deep, and four feet wide, and long enough to contain one hundred and fifty or two hundred bushels each: they are then piled about $3\frac{1}{2}$ feet like the roof of a house, covered eight or twelve inches with straw or meadow hay, and then with the earth thrown out of the trench and enough added to make it, when the weather becomes quite cold, about a foot thick. Be careful not to cover too thick *at first*, as the heat of the vegetable is great, when confined in so large a body, and would destroy them.

I am, Gentlemen,

with much respect, yours,

JOHN PRINCE.

Salem, November 15th, 1821.

GENTLEMEN,

AGREEABLE to the directions of the Trustees of the Massachusetts Agricultural Society, requiring each claimant to state the quality of land, its previous product, &c. I submit the following in support of my claim heretofore entered for the society's premium for raising the greatest quantity of potatoes on an acre the present year.

The lot is situated by Bridge street, so called, in Salem, county of Essex, and owned by Messrs. Waitt and Peirce. It was broken up in 1819; soil black, low and heavy. For about twenty years previous to which, it had been mowing land. The last year potatoes were raised on the lot, nine cart loads of barn manure, about twenty bushels white seed potatoes, and whole labour then employed in production of crop, nineteen and an half days.

The cultivation, &c. the present year has been—1st. Four loads of barn, and five of privy manure, for one yoke of oxen, were put on the lot.

2d. The seed, an equal proportion of whites, blues and long reds, making in all about twenty-four and an half bushels.

3d. Two days ploughing and half a day furrowing, with one yoke of oxen, no driver; 17th and 19th of May, three days planting; 14th June, three and an half days weeding; 16th July, 3 days hilling; and from 1st October, ten days digging crop, making in the whole twenty-three days labour.

4th. The amount of crop measured, five hundred and eighteen and an half bushels on the acre.

Accompanying you have the certificates of Surveyor, &c.

Respectfully yours, &c.

JOHN DWINELL.

To the Committee on Root Crops, &c.



I THOMAS SHEPHERD, of Northampton, certify, that I caused a piece of land across the end of my cornfield to be surveyed on the 16th October last, which measured one acre and eight rods of ground, and after sticking off the eight rods picked and husked the corn in the field, carted it to the barn floor, and carefully kept it by itself; set all my hands thrashing it on the first day of the Cattle Show: brought tit to the show in the afternoon, and sold it under the inspection of hundreds of people. That the corn was perfectly hale and

dry, and measured eighty-seven bushels and twenty-four quarts, all produced from one acre of land sowed in rows about four feet apart.

I further certify, that I caused an acre of land adjoining the above to be measured off, which was sowed in alternate rows of corn and Ruta Baga; the corn rows being eight feet apart; that the same produced sixty-one bushels and twelve quarts of corn, and one hundred and sixteen bushels of Ruta Baga. That the whole field of nearly twenty acres (except the first acre) was sowed in rows eight feet apart, and that the half acre which yielded $61\frac{1}{2}$ bushels was not better than a fair average of the field. That the ruta raga sowed between the corn rows was almost burnt up with the drought.

The first acre I enter for the society's premium of 30 dollars for the greatest quantity of corn on an acre, and the second acre for the premium of 30 dollars for the best mode of raising corn.

The ploughing, manuring and preparation of the ground was the same in both cases, and the following statement contains the facts in relation to the culture.—The land is the driest part of my farm, and the corn *suffered much* from the drought. The field contains nearly twenty acres, which with four others of about the same size lying on the banks of the Connecticut, comprizes that part of my farm cultivated under a five years rotation of crops without manure, except the corn year, when it is spread on profusely. It had lain in grass (without any manure being put on it) three years when I commenced ploughing it last fall; manured it this spring at the rate of nearly fifty loads to the acre taken fresh and green from the barn yard and pig sty, and all made during the winter (except some heaps of compost not very good) by the cattle, sheep and pigs, from straw and oats mixed with the stable manure; cross ploughed the land an inch or two deeper than the fall ploughing, covered up the manure as fast as it was spread about from the carts; harrowed the turf fine with light seed harrows; furrowed the land back to back

in ridges four feet apart, the tops of the ridges being two feet higher than the bottom of the ditches; put on the harrows across the ridges, and filled up the ditches with fine rich mellow earth a foot deep well mixed with manure, on which the corn was carelessly strewed along *very thick*, sprinkling gypsum on it before covering it up. I find by my journal that I began to sow the corn on the 10th, and and finished it on the 26th day of May; that I hoed it three times, beginning the first week, and ending the last week in June. That this is the best mode of raising corn does not admit of a doubt in my mind, and that it is so, ought be received as an axiom.

I have tried every plan for several years past, and this is the third year that I have sowed it in rows from six to eight feet apart, with a variety of roots and plants between them. The first year I got 444 bushels to the acre, or rather from half an acre; the second year 50 bushels, and this year $61\frac{1}{3}\frac{2}{2}$ bushels. It is my belief that 75 bushels corn and 3 or 400 bushels Ruta Baga (or 2 or 300 bushels potatoes) can be raised on an acre of good rich ground cultivated in this way; but the corn must be sowed *very thick* in rows eight feet apart, and the ditch well filled with fine mellow earth, and *plenty of manure*, nor is it an expensive mode of culture considering the great crop to be obtained. The cross ploughing and furrowing is extra work, but this it is, with the aid of the harrows that makes the great crop, if sowed in wide rows, as my experiment this year proves, having got at the rate of $122\frac{2}{3}\frac{4}{3}$ bushels to the acre in this way, and in the narrow rows, with more exhaustion of the land, only $87\frac{2}{3}\frac{4}{3}$ bushels. With regard to the expence of cultivating a single acre of land, the Trustees will please to consider that I do not cultivate any one acre of land with a view particularly to a premium, and therefore cannot ascertain the expence. I would observe however that the extra expence of cultivating corn in this way beyond what it is in the usual

way in hills is inconsiderable. They will also decide which of the two is most meritorious, him who cultivates his whole farm alike both as to labour and manure, or him who devotes all his energies to get a great crop, from a single acre, and robs the residue of his farm for the benefit of a premium.

THOMAS SHEPHERD.

Northampton, November 20, 1821.

To Benjamin Guild, Esq. Boston.

AN ESSAY, ON THE ADVANTAGES OF MANURING WITH GREEN CROPS. By S. W. POMEROY, ESQ. FIRST VICE PRESIDENT OF THE SOCIETY.

THAT eminent chemist, Sir Humphrey Davy, who has shed so much light on the *practice* as well as on the philosophy of Agriculture, observes, that "*land* when not employed in preparing food for animals, should be applied to the purposes of the preparation of manure for plants; and that, this is effected by means of green crops, in consequence of the absorption of carbonaceous matter in the carbonic acid of the atmosphere. That, in a (*naked*) summer fallow a period is always lost in which vegetables may be raised, either as food for animals or as nourishment for the next crop."

The rewards offered by the board of Trustees of the Massachusetts Agricultural Society for more than twenty years successively, for the best experiments on ploughing in green crops for manure, appear to be still unclaimed; there is of course good reason to believe that the practice is very limited in the Commonwealth. To shew the advantages that result from such a system, elsewhere, the following is transcribed from a letter that I addressed to John S. Skinner Esq. of Baltimore, the able and zealous Editor

of the AMERICAN FARMER, and which appeared in that paper last November.

“Among the various plants applied as green dressings for the restoration of worn out soils, the WHITE LUPIN stands pre-eminent in those climates that will permit their growth between the periods of *harvest* and *seed time*. That a trial may be made with them, I have forwarded half a bushel of the seed, which I trust you will cheerfully distribute for the benefit of our Southern brethren. They were sent to me from Fayal; and the following account, which I have collected, of the effects of their culture, will, at least, serve to convince us. that “the Earth *ever subservient to the wants of man*,” when exhausted by his insatiable demands, requires from him but a little *mechanical* aid, to enable her still to ‘spread his walks with flowers and his table with plenty.’ The island of Fayal though in the same parallel of latitude with Maryland, is subject to a temperature seldom above 80, or below 50 degree of Fahrenheit. The soil is thin, and incumbent on *scoria* and other *undecomposed* volcanic substances; but naturally exceedingly fertile. For a long period of time, every part accessible to the plough, has been in tillage; and, with the exception of selected patches shifted for flax, under alternate crops of wheat and Indian corn, (the latter being the chief food of the labouring classes.) Such a system of severe cropping; the resources for manure very limited, and without the advantage of improved implements or modes of culture, caused a visible deterioration of the soil; the crops lessened from year to year; partial importations were resorted to; and the *well born* of the island became seriously apprehensive of the most distressing consequences.

“Providentially, some 15 or 20 years since, the *White Lupin* was introduced from Italy, and though it came by accident, to a people strongly bigotted to old practices of husbandry, the cultivation soon became general.

“The wheat and corn are harvested in August, the land is soon after ploughed and Lupins sown on the *surface*, or but slightly covered, at the rate of two bushels per acre. In February they flower, and are then turned in with the wheat, corn or Flax in their several rotations. By this management a progressive improvement of the soil has become apparent: there are no longer apprehensions of famine; a very redundant population subsists; and besides supplying 10,000 on the neighbouring island of Pico, where scarce any thing but the *vine* is cultivated, a surplus is often sent to other islands, and in some instances to LISBON!

“Lupins are ranked by Gardeners among the hardy annuals, but I am not able to say what degree of frost they will bear. From a single experiment I am led to believe that, owing to the droughts to which our climate is subject, not much advantage will be derived by sowing them on summer fallows as a dressing for winter crops. Their application to spring crops, in those sections of our country where they can be grown in season for that purpose, will probably become the first object of experiment.”

The culture of crops to plough in for manure, is by no means a modern practice. The *Romans*, 1800 years ago, according to Pliny, cultivated and applied Lupins for manure in the same manner *precisely* as they now are in Italy, and in Fayal.* But this plant is supposed to be unsuitable for our climate:—we should not despair, however, of finding a substitute.

It has been asserted by Sir Humphrey Davy, “that it is a general principle of chemistry, that in all cases of decomposition, substances combine much more readily at the moment of their disengagement, than after they have been regularly formed. And in fermentation beneath the soil the fluid matter produced, is applied instantly, even

* See Pliny's Nat. Hist. Book 17, chap. 9. book 18, chap. 14—27.

while it is warm, to the organs of the plant, and consequently is more likely to be efficient than in manure that has gone through the process. He also remarks, that it may be doubted whether there is as much useful manure at the end of a clean (*green crop*) fallow, as at the time the vegetables clothing the surface were first ploughed in. That the action of the sun upon the surface of the soil, tends to disengage the gaseous and volatile fluid matters that it contains; and heat increases the rapidity of fermentation; and that in the summer fallow (*with green crops*) nourishment is rapidly produced, at a time when no vegetables are present capable of absorbing it."

Such expositions shew the importance of selecting plants that will arrive at sufficient stature and succulence, in season for spring crops; and it may be well to enquire what vegetables there are within our reach, that can be successfully applied.

CLOVER is unquestionably one of the greatest improvers; but a season is lost by its application. There is another objection—*weeds* and *wild grasses* that rise with it, the first season, ripen and shed their *seeds*; the effects of which, are severely felt in the succeeding tillage rotations.

BUCK WHEAT has been most used in this country for green dressings; and doubtless with good effects on summer fallows for winter crops; but, besides not coming on early enough for *spring crops*, it often leaves the land foul with its own *seeds*; and is allowed, on all hands, to be a great exhauster.

I am aware that an opinion generally prevails that, if plants are cut in the *milk*, as it is termed, or ploughed in before they ripen their seeds, that the soil is not exhausted! I presume this theory is founded on the supposition, that while the stalk and foliage are green, the supplies are drawn from the atmosphere; but so soon as they become *shrivelled*, the seeds are perfected with food exclusively from the soil.

This reasoning is plausible, and possibly correct as to certain classes of vegetables, but the position should in all cases be admitted to a very limited extent.

The hum of *bees* in a field of *buck wheat*, and the flavour of the *honey* from the hives in the vicinity, afford pretty convincing proofs that the atmosphere does not alone produce such *sweet* results!

There is another consideration that should govern us in the selection of plants for the object in view. It cannot be doubted, but that the soil contains, not only *materials* suited to particular vegetables, but that several species require the same *principles* to furnish their food. Now from an experiment, well defined, twenty years ago, with oats *cut in the milk*, and from constant observation of the effects of their culture on my neighbour's land since, I feel a thorough conviction that they exhaust the soil of those materials or principles necessary for *clover* and other grass, to a degree very destructive to those all important crops.

And such have been my impressions that their deteriorating effects on the soil would be lasting, that a few years since, I restricted a tenant, in a lease which he now holds, from sowing *oats*, even to cut in the *milk*, under a penalty of an increased rent of ten dollars an acre,—I wish to be understood, that these observations are meant to apply solely to dry soils—such as are suitable for Indian corn or wheat—and in our dry climate.

MILLET is a plant, the cultivation of which is increasing, and as an important article for *fodder*, or for *soiling*, will probably within a short period be more fully appreciated, that seems well adapted to sow on summer fallows for winter crops, or to turn in late in the fall to enrich the land for the ensuing spring tillage or other spring crops. Of the exhausting properties of millet I am ignorant, but from the bulk of the stalk and foliage, it must make copious returns to the soil. The cheapness of the *seed* is much in favour of its extensive application.

Of all the vegetables that may be best substituted for the Lupin, RYE, in my opinion, is the most promising. This plant, too much neglected to produce food for brutes, but, what is to be lamented, *too much cultivated to furnish poison for men*; possesses all the ameliorating properties for the soil, that we are accustomed to derive from any of those belonging to the *leguminous* tribe. Rye, withstands severe drought; and without manure it feeds millions in some countries, from soils little better than blowing sands.

Those soils inclining to loam, it will continue to enrich by a succession of ripened crops, and it is a fact within my own observation, that rich *friable* loams, which have been exhausted by repeated, *unmanured*, crops of *Indian corn*, have been in some measure restored by two or three successive crops of Rye. If it will do this with the *dry stubble*, what may we not expect from it *green*, when buried rampant and succulent in the soil?

In order to ensure a sufficient growth, in season to plough in with *Indian corn* and most of our *root* crops, Rye should be sown the beginning or by the middle of August, and much thicker than when intended for a crop of grain. If it gets too forward before winter, it should be fed down with *light stock* or mown. Winter Rye sown early in the spring grows rapidly, and will generally arrive at sufficient stature in season to be turned in as manure for *Rutabaga*. Rye ploughed in when in full flower and *Millet* sown, which it will bring forward with great luxuriance, and that in its most succulent state, turned in for *Wheat*, may be one of the best fallow preparations for it that can be devised; and is probably the cheapest and most convenient process to restore an exhausted soil. At the same time it should be considered, that *gypsum* acts more powerfully on soils thus prepared.

I have been induced to submit the foregoing remarks, not only from an impression that such a system, as has been imperfectly suggested, will tend to increase our pro-

ducts immediately, and ensure a progressive improvement of the soil, but from a firm conviction, that it is one of the most efficient resources that the farmers of New England can command, to enable them to meet the crisis that awaits them; and for which, perhaps, they are not fully prepared.

By the noble efforts of the State of New York, those fertile regions in the west, near three hundred miles from boat navigation, will soon be reached by water within forty! And I apprehend that the question cannot be too soon propounded—How is the *Massachusetts farmer* to meet in the market on equal terms, the flood of agricultural productions which will then inundate the shores of the Atlantic?

Is it by *Canals* in an uneven confined territory, on which the most profitable staple is grazing? We have no *inland seas* mingled with mighty rivers, to feed levels through rich alluvial tracts of an hundred miles in extent! No inexhaustable reservoirs of *brine*, within twelve feet of the surface, seven times stronger than the waters of the ocean; and from which the whole Atlantic seaboard may be supplied with the heavy article of SALT as *cheap* and of a *purer quality* than can be obtained from any part of the world! Neither do our mountains afford those valuable and ponderous minerals, the transportation of which on canals, contribute to the main support of those costly undertakings in Europe!*

On the other hand; would not greater benefits flow, was every dollar of *capital* that can be spared from commerce and manufactures, appropriated to those vast improvements of which the soil of Massachusetts is susceptible? And should a mania for water works arise, it may have ample and profit-

The canal from Lake Erie to the Hudson, 363 miles, will probably be finished in 1823. For 240 miles on its line, not a single yard of rock is necessary to be removed! The average cost of the whole canal is estimated at \$13,000 per mile. The expenditure for canals in England average \$22,000 per mile. The Middlesex Canal is said to have cost \$17,000. Mr. Gallatin supposed the medium cost of canals in America would amount to \$31,000 per mile. See North American Review for January, 1822. Aft. xii.

able gratification, by cutting *trenches* on the ridges, and *tunnels* through the hills, thereby draining the numerous ponds, swamps and bogs, creating luxuriant meadows; and by erecting *hydraulic machines* on the innumerable streams and brooks; to irrigate the parched fields on their borders! It is by such enterprizes that the Massachusetts farmers may expect to prosper, aided by a regular system of management, with the application of all the *manures* that can possibly be collected, on one third part of the soil that usually receives them, and by enriching the remainder by that joint process of nature and art, *ploughing in of green crops*.

Brighton, 3d June, 1822.

[From the American Farmer.]

The immense importance of durable timber for farming as well as naval purposes, gives an interest to every judicious, or even plausible speculation on the subject. The communication from a person of Commodore Porter's intelligence, will of course attract attention; especially when viewed in connexion with his official station, which peculiarly demands the best attainable knowledge of the matter. Believing the opinion he has given, which is, and probably has been for ages that generally received, to be erroneous; and thinking it possible that I might throw some light on the subject;—I submit to your readers the following observations on

THE FELLING OF TREES FOR TIMBER.

IN the 22d number, volume III, of the American Farmer, is a letter from D. Porter, (commodore Porter) on "The best time to fell Timber with a view to its durability"; in answer to one from the Editor, requesting a communication on the subject. The commodore, "availing himself (as he says) of the knowledge and experience of others, in support of his opinion," states this to be, that "the most proper season for felling timber, with a view to its durability, is in the winter, when the sap has ceased to circulate." This corresponds with the opinion I have heard generally expressed, ever since I noticed observations on the subject; and the precise time in the winter is fixed, by tradition, to "the old of the moon in February."

Many years (perhaps half a century) have elapsed, since I have been inclined to doubt whether the animal and vegetable kingdoms were under the government of the moon. The commodore thinks its "influence nearly if not quite as powerful as [that of] the Sun." He asks, "why that body [the moon] whose attractions can raise the tides and influence all animal creation, should not have the power to put the sap of vegetables into circulation, assisted as it is by capillary attraction?"—As heat is essential to give motion to the sap in plants, and the heat of the sun is adequate to that effect, it is not necessary to seek for any other cause; still less to resort to one merely conjectural. No means yet tried have discovered any heat in the rays of light from the moon.

If any effects on vegetation were ascribable to the moon's attraction, yet in an entire revolution, its different distances are not so considerable, as to produce very different effects. Besides, combining its different periods, it is as near the earth in its decrease, as in its increase; and its power of attraction must be the same in both cases. The sowing of seeds, therefore, and their vegetation, and the growth of the plants proceeding from them, cannot, (as the commodore seems to suppose) be influenced by the phases or appearances of the moon. The notion of the moon's "influence on all animal creation," if not a novelty, I believe to be altogether visionary. Anciently, indeed, mad people were supposed to be affected or influenced by the moon; and thence were called lunatics: but that opinion seems now to be exploded. I am indeed satisfied (contrary to the general belief) that *changes in the weather* have no dependence on the moon; but happen indifferently at all periods of its increase and decrease. It has not heat to raise watery vapours from the earth, or to suspend them in the air; and under the same aspect of the moon, the weather is fair at one place and foul in another.


No one can doubt that "dryness is favorable and moisture unfavorable to the durability of timber;" and in winter the

sap of trees is probably inspissated to a considerable degree ; but no living tree is then “ devoid of sap.”—The important question, therefore, in relation to the felling of timber trees, is, I am inclined to think, not simply *when trees have the smallest quantity of sap* ; but *at what season the sap they contain will most easily escape or be expelled*. The facts I am going to state may show this to be in the spring, when the sap is thinnest, and flowing in the greatest abundance.

In the year 1800, divested of public employment, and about to commence husbandman, I made a visit to the late Joseph Cooper, of New Jersey, one of the most intelligent farmers I ever knew, to converse with him on the subject of his vocation. Among other things, he spoke of *timber* ; and stated the following facts. His farm lying on the Delaware river nearly opposite to Philadelphia, was exposed to the ravages of the British army while occupying that city. Pressed for fuel, his fences first fell a prey to their necessities. In the month of May, 1778, they cut down a quantity of his white oak trees : but circumstances requiring their sudden evacuation of the city, his fallen timber was saved. The trees he split into posts and rails. The ensuing winter, *in the old of the moon in February*, he felled an additional quantity of his white oaks, and split them also into posts and rails to carry on his fencing. It is now, said he, two and twenty years since the fences made of the May-felled timber were put up, and they are yet sound ; whereas those made of the trees felled in February, were rotting in about twelve years. He then pronounced confidently, *that the best time for felling timber trees, for durability, was when their sap was vigorously flowing*. He said, also, that white oak and hickory trees felled at that season, would not be attacked by the worms, producing what is called “ powder post.” And added that hoop-poles of oak and hickory ought, for this reason, to be cut at the same season.

In the same year, accident threw in my way the late Oliver Evans’ book on the construction of mills ; to which

was subjoined a treatise of a Mr. Ellicott, a mill wright, on the same subject. Turning over some of the leaves of this treatise, I lighted on the passage in which the author directed *hickory* timber, intended for the cogs of wheels, *to be cut when the sap was running, that they might not become powder post*.—In the following winter (1801) being in Boston, and conversing with a friend from the country on subjects of husbandry, I repeated Mr. Cooper's observations, as above stated. This friend then mentioned a farmer, the well pole (or sweep) of whose well happened to break at a very busy time: that to supply its place, he cut down the first small tree that came to hand; and this was a white birch. The sap then running freely, he stripped off the bark, and put up his pole; and it lasted seventeen years. Had he put it up with the bark on, it would probably have rotted in a year; *the closeness of the birch bark preventing the escape of the sap*. A close coat of paint, laid on unseasoned wood, operates like the close birch bark, by confining the sap, and hastening its decay.*

More than fifty years ago, seeing a quantity of logs, with the bark on, piled up by a chair maker's shop, I asked him why he did not split them, that they might the sooner get seasoned. He answered, that so long as the bark remained on the logs, the sap remained in them, and they were more easy to be dressed and turned.  Unless timber trees be cut when the sap is running, the bark cannot be *stripped* off; though with considerable labour it may be removed by the axe and drawing knife; but less perfectly.

The late Mr. Bordley (who was vice-president of the Philadelphia Society of Agriculture, from its formation in 1785, until his death) once told me, that when riding in the vicini-

* In confirmation of the opinions advanced by Col. Pickering, we can add, that poles cut from the green willow, the tenderest and least durable of our trees, in June, and stripped, became extremely tough and hard, so as to be applicable to many uses, such as ladders, &c. for which spruce is used. The topplings of all trees cut off in June become extremely hard, and will endure 100 years without rotting. These we know to be facts. EDITORS.

ty of Philadelphia, he met a master ship-builder, who had been viewing some trees for ship timber. Mr. Bordley mentioned to him the greater value of ships built with the timber of trees allowed to remain standing a length of time after their bark had been stripped off. The shipwright said he was fully sensible of it; the ships would last so much longer. Why then, asked Mr. Bordley, do you not adopt that practice? Because, said the shipwright, such timber becomes very hard, and costs much more labour to work it.—I have heard new settlers dispute, which was the best way of clearing woodlands; whether by girdling (chopping the bark all round the trees, to stop the circulation of the sap, when they gradually die) and letting the trees stand; and at once seeding the land for a crop: or by cutting all down at first, and burning. The advocates of the latter mode, said, that by girdling, and letting the trees stand, they became dry, and so hard as greatly to increase the labour of afterwards cutting them down.

“Dr. Plott [who wrote in the 17th century] says, it is found by long experience, that the trunks or bodies of trees when barked in the spring, and left standing naked all the summer, exposed to the sun and wind, are so dried and hardened, that the sappy part in a manner becomes as firm and durable as the heart itself. This is confirmed by M. Buffon, who in 1738, presented to the Royal Academy of Sciences at Paris, a memoir, entitled “An easy method of increasing the solidity, strength and duration of timber;” for which purpose, he observes, “nothing more is necessary than to strip the tree entirely of its bark during the season of the rising of the sap, and to leave it to dry before it be cut down.*”

But why should timber trees be felled in May, (or when the sap is freely running,) as in the case stated by Joseph Cooper; or barked and left standing until dry, according to Buffon, be more durable than timber felled according to the prevailing and popular notion, of the Old of the Moon in

* See the British Encyclopædia, article Tree; also Rees's Cyclopædia, article Timber.

February? For an answer I offer the following conjecture.—The thinner and more fluid any body is, the sooner and more perfectly I presume, it will evaporate. The sap of trees is doubtless more inspissated, or of thicker consistence, in winter than in the spring, when it is apparently thin and watery. In the latter state it will find its way, and escape, through the pores of the wood, with vastly greater ease and expedition than when, as in winter, it is much more inspissated. Molasses, condensed by the winter's cold, runs very slowly through tubes of a large size. In summer, the same molasses swelling to a larger volume, and becoming very thin, will pass through very small tubes, and, I believe through the pores of some sorts of wood. The same substance (molasses) exposed, in a small quantity, to the hot sun of summer, would soon discharge its more fluid parts, and at length leave, as I suppose, a solid substance behind: but if much diluted with water, would not the whole substance be nearly if not quite carried off by evaporation?—the same reasoning may apply to trees left standing, after being divested of their bark in the spring.

It appears by some English books, that their usual time for felling oaks is in the month of April, when the sap is running, and they can strip off the bark for tanning. But the commodore states, “*that in all their contracts for timber for naval purposes, the influence of the moon on the sap is more guarded against than any other;*” and he adds, what seems very extraordinary, that “*more attention is paid to the time of the moon when timber should be cut, than to the season of the year;* for (as before remarked) seeing the moon is at the same distances from the earth during its decrease as its increase, its power of attraction must be the same in both cases; and consequently all the *different effects* which tradition has ascribed to the *waning* and the *waxing* moon must be visionary.

The *maturity* of timber is quite another thing; and probably of more importance than the time of felling it. There is a point of *ripeness* when trees acquire their greatest solid-

ity, strength and durable quality for timber. The late Dr. James Anderson,* says—"It is now well known that the best fir timber which comes from Riga, and other places on the Baltic, is the produce of the same tree that is commonly cultivated here [in Scotland] under the name of the *Scotch fir*; but having *grown more slowly* in those countries than the planted trees do here, and having been allowed to attain A MUCH GREATER AGE, that wood is beyond comparison closer, and *four times at least more durable*, in any kind of work, than the *young raw* deals [boards and planks] which are made of wood the usual growth of this country."

Dr. Anderson, in early life a practical farmer, a man of letters, and an ingenious and philosophical observer of nature, appears, nevertheless, to be entirely mistaken in his ideas of the cause of the hardness and strength of wood, and in ascribing to the same cause in part, its durability.—Mentioning the rings in trees which mark their growth, he says—"as one of these rings is added to the circumference of the tree each year of its growth and forms the whole increment of the tree for that year, it follows, that the less that increment is, or in other words, the *slower* the trees grow, the less will be the breadth [thickness] of these rings, and of course, the closer the grain of the wood, and the *harder* also it will be." Just the reverse of this is the fact. Every farmer and carpenter, in the United States, knows that the *thicker* the annual ring, or, in the common language, *the larger the grain*, the harder and stronger is the wood. Hence the butt-cuts of white oak are preferred for the spokes of wheels, and of hickory for axe-helves. Every wood-chopper also knows how much easier it is to fell and cut up the trees growing with small grains in a close forest, than trees of the same kinds which have grown singly and faster in open grounds. And every man who has used husbandry tools, a fork or rake for instance, whose handles are of ash, knows how much harder, stronger,

* Essays on Agriculture, Vol. III.

and heavier, because more solid, they are when made of timber with large grains, which had grown fast in good soils, or at such distances from tree to tree as not to rob one another of their food,—than when of small grained, slow growing timber. But the timber of trees, pasture oaks for instance, standing singly and at distances from others, and which are of rapid growth and consequently with large annual rings, or grains, though twice as tough and strong, is found, I have long understood less durable than the timber of oaks of slower growth. The reason is obvious. The oaks in forests do not attain the sizes fitting them for ship timber, until they have reached the age of *maturity* or *ripeness*. In this state they may probably continue stationary for some years: but if left standing for many years after they are of *full age*, the toughness and strength of the wood are greatly impaired. But *pasture*, or other *fast growing* oaks, attaining, in much fewer years, sizes suitable for ship-building and other uses, are sometimes cut down before they *come of age*, before they are *mature*, or *perfected by time*: and hence the earlier decay of such timber. The fact stated by Dr. Anderson, in comparing the “*raw*” *Scotch* and the *mature Baltic* firs, exemplifies this doctrine. And in correspondence with it, I will mention a maxim which probably had been handed down from generation to generation, and was repeated to me by my father when I was a boy, upwards of sixty years ago, which I perfectly remember, and have repeated to others: “My father used to say (so the maxim was introduced to me) *young wood for fire, old wood for timber*.”

In reference to the memoir of M. Buffon, before mentioned, the authors of the British Encyclopædia, say that “By many experiments, particularly described in that essay, it appears that the tree should not be felled till the third year after it has been stripped of the bark; that it is then perfectly dry, and the sap [sap wood] become almost as strong as the rest of the timber, and stronger than the heart of any other oak tree which has not been so stripped; and the

whole of the timber stronger and heavier,* and harder ; from which he thinks it fair to conclude, that it is also more durable." And they add, that "the navy board, in answer to the enquiries of the commissioners of the land revenue, in May, 1789, informed them that they had then standing some trees stripped of their bark two years before, in order to try the experiment of building one half of a sloop of war with that timber, and the other half with timber felled and stripped in the common way."—"We are sorry that we are not able to inform our readers of the result of the experiment."

Commodore Porter and his colleagues of the American Navy Board, may have it in their power to make, and carry into complete effect the same experiment. So may farmers possessed of timber trees. To render the experiments more fair and conclusive, trees as nearly as possible of the same size, and growing in the same soil, should be selected. Growing in the vicinity of each other, the equality of size will be an indication of an *equality of age*,—a point, probably, of material importance.

These experiments I hope will be made extensively by farmers, in preparing their trees for fencing, and for carts and other implements much exposed (often unnecessarily) to all changes of the weather. For however plausible *theories* may appear, *careful experiments alone* can determine their correctness.—Experiments by farmers may very easily be made, in their fences ; by having some panels (or lengths of rails) of timber prepared in one way and then a like number of timber prepared in the other. At the same time too, they can try an experiment to ascertain whether, in post and rail fences, the rails, with their heart edges downwards, will last longer (as the commodore supposes) than with those edges upwards, in the mode universally practised. He suggests that the concentric rings (the annual growths) in trees split

* If heavier when of the same bulk with common timber, its fibres must lie closer together, be therefore less pervious to moisture, and consequently more durable.

into rails, and these placed in fences with their edges upwards, form so many cups or hollows, into which the rains and dews falling on the rails enter; and having no other way to escape, soak through the rings to the sap-wood and bark on the under side, and thereby hasten the rotting of the heart wood above. I much doubt the correctness of this theory. Rails placed with their heart edges upwards, have very steep roofs, by which water speedily runs off. Their heart-wood soon seasons, and its surfaces become close, without visible cracks. But place the broad, bark side upwards, the falling water will rest longer upon it, and enter the sap-wood, often an inch or more in thickness, and as soon as this shall become rotten, it will be a sponge to receive and hold water, to soak into and gradually rot the heart-wood below. Such is my view of this subject: but let experiments be made. For the purposes of the navy, or other shipbuilding, experiments may also be easily made; though not so satisfactorily as by constructing a vessel with the two sorts of timber as designed by the English Navy Board. An equal number of pieces of timber felled in the two different ways, may be dressed to the same sizes, and equally exposed to the weather in all its changes: and to expedite the result, they may be often immersed in water, so as to be almost daily wet and dry.

Hickory (in New-England generally called Walnut) grows in many parts of our country. It is a tough and hard wood; but when exposed to the weather, soon decays; yet may, it seems be advantageously used in salt waters infested with worms. Eighteen or twenty years ago, passing by a saw mill placed on tide water, I observed some hickory planks. I asked the sawyer for what use they were intended. He answered, for the sluice ways or other water works, of tide mills; because not liable, like oak, to be eaten by the worms. Passing a few days ago by some tide mills on the same streams, I mentioned the fact just stated to one of the proprietors. They continue to use hickory for the same purpose, because, said he, "the worms don't touch it." Any person inclined

to make trials of this wood for such purposes may previously ascertain the fact, by sinking two pieces, one of oak and the other of hickory, in waters where worms are known to abound; and after a few months taking them up again.

TIMOTHY PICKERING.

Salem, September 10, 1821.

AGRICULTURAL INTELLIGENCE.

WE have been favoured with the perusal of an account of the management and success of a gentleman, who cultivates a small farm in Brooklyn, in whose accuracy, and veracity we place full reliance; and the result is such, as affords abundant encouragement to careful, and spirited cultivation. We regret, that an intimation, which we made to the gentleman, who shewed us the statement, did not procure the consent of the writer to its publication. If the delicacy of the writer prevented his avowing himself, still the facts might and would have been of great value to the public. The result of the statement, (and all the details are given,) was, that his farm had produced a net income over expenditure, amounting to more than 12 per cent on the capital employed.

In this connexion, we may also mention some facts, which we have learned of the success of the culture of the Hon. Mr. Quincy. We had hoped to obtain for this number an authentic statement by himself. The general outline is, that after reimbursing all expenses of cultivation, his estate gave him more than six per cent. on its value. He has this year under the plough principally for raising vegetables on the sciling principle, 36 acres. If it can once be made to appear that theoretical cultivators, by the application of skill and capital, without their own per-

sonal labour, can obtain a fair rate of interest for their money, agriculture will then be considered as in a prosperous condition, and our farmers will listen more willingly to counsellors who *prove what they assert*. It is with this view, that we must express our earnest wishes, that gentlemen will communicate in detail, and with accuracy, their successful husbandry.

THE HUSBANDMAN, AND HOUSEWIFE.

A SMALL, unpretending book, with this title, has been published by Thomas G. Fessenden Esq. well known to the public by his numerous essays, and publications. We have read it with attention, and think it well adapted to the use of farmers, who would not go to the expence of purchasing larger works. It is a collection of receipts, many of which are from high authority, and all of them, as far as they are accurate, calculated for daily and constant use. That errors should creep into such a work must be expected. The recipes are often taken from such transient works, or sources, so that it would be impossible for the compiler to vouch for their efficacy or exactitude—but still its use must be very great to the class of people for whom it was principally intended. We learn that a new and improved edition is contemplated and we must say, that such a manual carefully revised, and purged of all erroneous articles may be of much more general use, than more elaborate works read only by a small part of the community. From our personal knowledge of Mr. Fessenden's industry, and attention to the economy of agriculture, we feel a strong conviction, that he will make this book worthy of patronage.

DR. DEANE'S NEW ENGLAND FARMER.

IN our last number, we mentioned, that Messrs. WELLS & LILLY had caused this valuable, and as we think, stand-

ard work to be revised* at their own expence, and had put it to press. A wish to render it as perfect as they could, to incorporate in it most of the improvements which have taken place in agriculture since the publication of the second edition, and to expunge from it all superfluous matter, or opinions which are now exploded, has delayed the work to this time.

It will probably appear in the course of a few weeks. We have no other interest in introducing this subject again to the notice of our readers and subscribers, than the wish to diffuse correct agricultural knowledge. Dr. Deane's work was certainly as good a compendium for its size, as could be found in Europe at the time it was published. It had the special merit, for *us*, of adapting European modes of culture to *our* soil and climate. Even in its improved state, it is not pretended that the work supersedes the necessity, with intelligent cultivators, of an extensive agricultural library, but it is calculated, and well calculated, to aid the experience, and enlighten and direct the practice of all descriptions of farmers. It has been necessary so far to enlarge it, in consequence of the great modern improvements in agriculture, that it may prove too expensive for *small* farmers, but we think *all* farmers in *easy* circumstances will find it a very cheap book. Many things will not be new to them, but even these they will find enforced by new reasons and arguments. Though written principally with a view to the New England States, there is no part of the United States in which it will not be found of great value, and perhaps it may not be and ought not to be its smallest recommendation to the farmers of the United States, that excepting the Rev. Jared Elliot's small tract, it was the earliest and by far the most respectable agricultural work ever published in the United States. The Farmer's Assistant

* A great part of the revision and corrections were made by Thomas G Fessenden, Esq.

by Mr. Nicholson, of the State of New York, a very respectable work, is apparently modelled upon it, and I presume the author will admit, what indeed his pages prove, the great assistance he derived from this work.

But in New England, it was thought best to republish Dr. Deane's work, with additions and connections, not with the wish, in any degree, to interfere with the other work alluded to. So far from it, Messrs. Wells & Lilly, to our knowledge, contemplated and proposed to the writer of this notice, the republication of Dr. Deane's work, before the Farmer's Assistant went to the press.

We repeat, that as Editors of this journal, and as individuals, we have no other interest in, or wish to promote the circulation of the new edition of Dr. Deane's New England Farmer's Dictionary, than the advancement of sound principles in agriculture. We wish well to all agricultural publications of *merit*, and as we have alluded to the Farmer's Assistant, we ought to add, that we think that work is one which deserves this character. We trust the demand of ten millions of people will be great enough for both, and in a few years, for many others.



MASSACHUSETTS AGRICULTURAL SOCIETY.

THE annexed list contains the names of all the members of the Massachusetts Society for promoting Agriculture, supposed to be now living. The largest portion of whom have been elected since June 1814; before which time, the members were held to pay one dollar *annually* to the funds of the Society, which entitled them to receive (on calling for them), the papers published by the Trustees, so long as they continued so to pay.

It was found so difficult to collect the assessments from distant members, that the Trustees determined, that all persons elected thereafter, should pay five dollars be-

fore receiving their diploma, and be entitled to all the Society's publications during their lives, from the date of their election.

Members previously elected were also permitted on the payment of five dollars, to enjoy the like advantages: were released from their annual subscription, and entitled to our publications for life, gratis. It would be very desirable that such a course might be adopted by them, as our numbers would be more extensively circulated and our means of granting premiums increased.

Many of the members elected since 1814, have not notified their acceptance to the Recording Secretary—those gentlemen have it still in their power, by sending five dollars to Messrs. Wells & Lilly, Booksellers, Court Street Boston, (who are the treasurer's agents for this purpose) who will deliver to their order their certificates and also the publications of the Society since the date of their election.

Honorary members, if they wish it, are also entitled on payment of five dollars to receive the publications of the Society, at the Bookstore of Messrs. Wells & Lilly.

The whole number of members, if we have computed correctly, amounts to seven hundred and thirty.

MEMBERS OF THE MASSACHUSETTS SOCIETY FOR PROMOTING AGRICULTURE. JUNE 1822.

Hon. John Adams,
John Andrews, Esq.
Joseph Allen,
Jonathan Adams,
Hon. Benjamin Adams,
Paul Adams,
Caleb Ammidon,
Major William Andrews,
Asa Andrews.

Quincy.
Roxbury.
Worcester.

Uxbridge.
County of Essex.

Ipswich.
Do.

Daniel Appleton,	<i>Haverhill.</i>
James Ayer,	<i>Do.</i>
John Abbott,	<i>Brunswick, (Me.)</i>
Hon. Wm. Abbott,	<i>Castine, (Me.)</i>
Calvin Ammidon,	<i>Charlton.</i>
Benjamin Ashley, jr.	<i>W. Springfield.</i>
Timothy Alyne,	<i>Do.</i>
John Atkins,	<i>Natick.</i>
Major Chester Adams,	<i>Needham.</i>
Samuel Appleton,	<i>Boston.</i>
Augustus Aspinwall	<i>Do.</i>
Nathaniel Amory,	<i>Do.</i>
Nathan Adams,	<i>Medford.</i>
Cyrus Alden,	<i>Boston.</i>
Hon. Samuel C. Allen,	<i>Northfield.</i>
Abiel Abbott,	<i>Andover.</i>
Nathan Adams, jr.	<i>Medford.</i>
His Ex. Governor John Brooks,	<i>Medford.</i>
Benjamin Beal,	<i>Quincy.</i>
Samuel Bass,	<i>Braintree.</i>
Samuel Baker,	<i>Berlin.</i>
Elijah Bates,	<i>Westfield.</i>
Hugh Burghardt,	<i>Richmond.</i>
Hon. James Bridge,	<i>Augusta, (Me.)</i>
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Vol. VII.

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AN ADDRESS, DELIVERED BEFORE THE MASSACHUSETTS AGRICULTURAL SOCIETY AT THE BRIGHTON CATTLE SHOW, OCTOBER 9th, 1822. BY THE HON. TIMOTHY PICKERING.

GENTLEMEN OF THE MASSACHUSETTS SOCIETY,
FOR THE PROMOTION OF AGRICULTURE,

It appears to be expected, that at each of your anniversary meetings, a discourse on Agriculture should be delivered. The Trustees of the Society have requested me to address you at this time. But though willing to be laid under contribution to the great object of your institution, it has occasioned a degree of solicitude to present something meriting your attention. From the multitude of books written on the subject of agriculture—embracing in that word whatever should employ the thoughts and the labours of the skilful husbandman—the field would appear almost boundless: yet to select topics particularly interesting to the farmers of Massachusetts, and here to discuss them so as to communicate useful and acceptable information, was not unattended with difficulty. My address must necessarily be miscellaneous.

Philosophers and practical husbandmen have for ages employed their thoughts and their pens on the various operations in agriculture; yet diversities of opinion still exist; and the reasons of many of those operations have been little more than conjectural. What constitutes the food of plants, has long been a subject of diligent inquiry. It was natural to suppose that if this food could be discovered, it could

more easily be provided, or at least be more efficaciously administered. The palpable differences which distinguish the immense variety of plants, in their forms, textures, colours and tastes, naturally suggested the idea, that each variety required its specific nourishment. Yet it being a matter of common observation, that the same soil would nourish and bring to maturity multitudes of different plants, of very opposite qualities—some yielding wholesome food, and others a deadly poison—at the same time all growing together, and robbing one another; a nobler and more simple idea presented itself—that the food of all plants was the same; but that each species was endued with the power of converting that food to its own peculiar substance: as among animals, the same grain produced all the varieties of flesh which go to sustain the life of man. In the vegetable kingdom, this supposed power of conversion seemed strikingly apparent in the effects of grafting of fruits. The juices imbibed by the roots from the earth, and immediately changed to the proper sap of the native stock, ascend and spread through all the limbs; and if each of these be grafted with a different fruit, the varieties will be as numerous as the branches.

By the modern discoveries in chemistry, these mysterious effects seem to be accounted for. For it appears that all kinds of plants are composed of a small number of elements, whose different arrangements and combinations produce all the varieties in question. Seldom more than seven or eight of those elements belong to plants, and three constitute the greatest part of their organized matter. But each of these is a compound, consisting of the same materials, only in different proportions. The three principal ingredients in the food of plants, and which by them elaborated constitute the food of man and other animals, are named by chemists, carbon, oxygene, and hydrogen; in other words, charcoal, vital air and inflammable air; and these exist in the air we breathe, as well as in manures consisting of vegetable and animal matters.

It may seem incredible that the thin air, an invisible matter, should be changed, in the process of vegetation, into solid substances, as wood and stone : but nothing has been more clearly ascertained, than that in 100 parts of pure limestone, 45 parts are fixed air, or carbonic acid ; which in the act of burning the stone into lime, is expelled : for if at that time the stone be weighed, it will be found to have lost so much of its original weight. It is also well known that this same lime, which slaked with water, or exposed to the air, falls down into a powder, will immediately afterwards begin to imbibe fixed air from the atmosphere, and eventually, though slowly, recover its original weight. It is this same carbonic acid, or fixed air, which, at the bottom of wells, every year proves fatal to a number of lives. For this air, when separate, being heavier than the air of the atmosphere, sinks and remains at the bottom of wells, and is a deadly poison. It is the oxygene in the atmosphere, called also vital air, because essential to animal life, which, mingled with the fixed air, renders the latter harmless.

I have introduced these few remarks on the food of plants, to present an idea—a very faint one indeed—of that very interesting subject ; which, as already observed, has so long employed the thoughts of philosophers and agricultural writers ; but the satisfactory discovery of which seems to have been reserved for the present age. This view serves to account for the vast variety of plants which will grow on the same spot of earth ; the ingredients of their food being substantially the same, but varied in the proportions peculiar to each ; and which each has the faculty of appropriating to its own use ; rejecting the rest, or casting it off as excrementitious.

But although the same articles of food will afford nourishment to a variety of plants, yet these are so formed as to require a variety of soils, adapted to their several constitutions ; some preferring a stiff, others a loose or light soil—some a moist, and others a dry one. Few, however, will

refuse a well compounded loam. Soils (like plants) however diversified in appearance, consist of different proportions of the same elements. Four earths generally abound in soils ; and these, by chemists, are called aluminous, siliceous, calcareous, and magnesian ; and of these the three first are the principal ; and, in familiar language, well known to every farmer, as clay, sand, and lime. Magnesia is often found in limestones ; and the combination is said to give the strongest lime for the farmer's use ; so as in smaller quantities to serve his purpose, as well as mild lime applied in much larger quantities.

The first object which claims the farmer's attention, is the nature or constitution of the soil. The next embraces the means of enriching it and preserving its fertility. That intimate mixture of clay and sand which is called loam, is the most desirable soil, as being already prepared for every operation in agriculture. A stiff clay demands opening by the addition of sand and other materials ; and a sandy soil requires the addition of clay. But calcareous earth is considered as essential to give to soils the capacity of attaining the highest degree of fertility. Few soils, indeed, are wholly destitute of calcareous matter, though it may be invisible to the eye : but very few possess so large a portion of it as would be salutary. There can be little danger, therefore, of applying it to excess in Massachusetts, where so little in any form has been found. Limestone is the great source of calcareous matter. But this is of various qualities. Very little of it is purely calcareous. Some limestones in Great Britain have been found to contain eleven parts in twelve of sand. Of such lime, if sixty bushels were spread over an acre of ground, five bushels only of calcareous matter would be applied. To know then the constitution of the lime he uses, is important to the farmer ; and not less so to the mason in preparing his mortar, which will require the addition of more or less of sand, according to the composition of the lime. All marles contain calcareous matter, and are of

greater or less value, according to the proportion which this bears to the clay, sand, or other substances mingled with it. All shell fish will supply this material. In some parts of the United States, remote from limestone, oyster shells are burnt to obtain lime for building; and in all seaport towns where many oysters are used for food, their shells will be found in quantities deserving the neighbouring farmer's attention; and if raised in piles, mingled with wood, may be burnt to lime.

Of the vast improvements of the lands in Scotland, within the last forty or fifty years, lime has been the basis; and the use of it the first step towards rendering the application of manures, strictly so called, highly productive. There they will lay from fifty to two hundred or more bushels on an acre. In Pennsylvania, where lime has been long and extensively used, twenty to fifty bushels to the acre has been found sufficient, and safer than any larger quantity, at least in the first application. A remarkable instance of the beneficial use of lime, though only at the rate of about twenty bushels to the acre, well merits a recital. The experiment was made on a field of ten acres, for which the farmer had provided two hundred bushels; but it being his first essay in using lime, it so happened that the whole quantity was disposed of when he had gone over nine acres. Indian corn was planted; and the crop was very great. The next year, the field was fallowed, and at seed time sown, a part with wheat and a part with rye; and good crops were produced. "In the Spring (says the farmer) I sowed it with clover and timothy (Herd-grass) and put two bushels of plaister on an acre; and had as great a crop of clover as could grow; it lay three weeks before the time of mowing." He adds—"The lime and plaister did all this; for no land could be poorer before. Where I laid no lime, I got no clover, although I put on the plaister."* The kind of soil in

* Memoirs of the Philadelphia Society of Agriculture, Vol. I. page 193.

which lime operated so powerfully, is not mentioned: but probably it was clayey; a very common soil in the country where this land lay. Another like instance occurred in the Delaware State, on a clay farm, on which plaister produced no effect until the land was limed.* While lime operates very beneficially on strong clays, it is said to be still more useful on lighter soils. To ascertain its effects on any lands, will require but little time and a small expense. A single cask of lime will be sufficient for a number of comparative experiments. If a few adjoining rods of land be set apart for the purpose, and the lime, by slaking, brought to a fine powder, it may be evenly spread on the several small strips, in different proportions, at the rate of twenty and any greater number of bushels to the acre. Then, by raking or harrowing, mix the lime with the surface soil, and plant each strip equally and uniformly with Indian corn. One equal strip, tilled and planted exactly as the others, but left unlimed, will enable the experimenter to see what advantage may arise from liming. In the next year the effects of lime, in its respective proportions, may be further tested, by sowing the same strips with equal quantities of one sort of grain and of grass seeds.

In like manner, small experiments may be made to try the effects of clay on light sandy or gravelly loams, and of sand on stiff clays. The clay should be carried on and spread, and lie on the surface during the winter, to break and moulder by the alternate frosts and thaws, that it may be more effectually mixed with the soil.

As to the manner of applying lime, I am satisfied the best is that recommended and practised where lime has been most extensively used: that is. to slake it with water, and as soon as it falls to a fine powder and is cool, to spread it evenly over the land, and with the harrow mix it with the soil; its greatest utility depending on its intimate incorpora-

* Memoirs of the Philadelphia Society of Agriculture, Vol. II. p. 187.

tion. In liming extensively, the lime is often, perhaps most commonly, carried on and dropped in small heaps, to be slaked by the moisture in the air: but it should be carefully attended to, that it may be spread as soon as it is slaked; or there will otherwise be danger of its setting in lumps, which may never again be duly pulverized.

If the application of lime be, as is represented, so important to the great and permanent fertility of the soil (and of this I entertain no doubt,) while the knowledge of the fact is all that is essential for the practical farmer to know; something more is desirable to satisfy inquisitive minds; and if the reason for using lime, or its mode of operating, could be shown, it would give confidence to the husbandman, while it gratified the philosophical inquirer.

A gentleman who is reputed one of the greatest chemists of the age (Sir Humphrey Davy) informs us that "when lime, whether freshly burnt or slacked, is mixed with any moist fibrous matter, there is a strong action between the lime and the vegetable matter, and they form a kind of compost together, of which a part is soluble in water:"—that "by this kind of operation, lime renders matter which was before comparatively inert, nutritive; and as charcoal and oxygen (vital air) abound in all vegetable matters, it (the quick lime) becomes at the same time converted into carbonate of lime;" that is, it is restored, by again combining with carbonic acid or fixed air, to the state in which it existed before it was burnt, except its being reduced to powder. Again he says—"Mild lime, powdered limestone, marles or chalks (for chalk is a limestone) have no action of this kind upon vegetable matter; by their action they prevent the too rapid decomposition of substances already dissolved; but they have no tendency to form soluble matters." He then remarks, that "chalk, marle, or carbonate of lime, will only improve the *texture* of the soil; or its relation to absorption; acting merely as one of its earthy ingredients. Quick lime when it becomes mild, operates in the same

manner as chalk ; but in the act of becoming mild, it prepares soluble out of insoluble matter." Again he says—"All soils are improved by mild lime, and sands more than clays."

While quick lime, according to this celebrated chemist, is so usefully applied to land abounding in fibrous matter, to effect its speedy dissolution, he says its application should be avoided, where a soil contains much soluble vegetable manure ; as it either tends to decompose the soluble matters by uniting to their carbon and oxygene, so as to become mild lime, or it combines with the soluble matters, and forms compounds having less attraction for water than the pure vegetable substance.

But an ingenious writer, under the signature of Agricola, in Nova-Scotia, says, that notwithstanding all these precautionary fears, the offspring of chemical creation, the British farmer is mostly in the habit of applying quick lime to all sorts of soils. And he assigns an adequate reason, that caustic lime cannot remain any length of time in the ground, without passing into a carbonate and becoming mild. This writer offers different reasons for the beneficial operation of lime : that it is capable of absorbing not only that quantity of carbonic acid which it possessed in its natural state (being 45 parts in 100) but an additional quantity ; and can form what chemists call an hypercarbonate. This, he says, is highly soluble in water : which accounts for the admission of lime into the structure of plants ; and that this excess of carbonic acid adheres very loosely to its base (the mild lime) and is liberated without any extraordinary degree of heat. The carbonic acid, a most important article of vegetable food, is copiously evolved in the putrefactive process of manures ; the calcareous earth fixes and prevents its escape—forms with it a hypercarbonate, and readily imparts it, in union with water, towards the nourishment of the crops. It is supposed to do more ; it unites with the carbonic acid floating in the air ; and when there is a scarcity of aliment

in the soil, it seizes and secures this food in the atmosphere, and afterwards disperses it, according to the calls and necessities of vegetation. Hence the necessity of keeping lime on the surface. It is then ready to intercept, and combine, with the carbonic acid which is generated by the fermentation of the putrescent matter lying at lower depths, and to attract the same gas (the carbonic acid) from the surrounding air.

I confess myself much better satisfied with the observations of Agricola, in accounting for the operation of lime, than with the solution offered by Sir Humphrey Davy. If the statement of the former be correct, we can see a reason for the long continuance of the beneficial effects of lime on land: for although it is not itself food for plants, it is constantly employed in collecting and imparting to them that food, from the sources which have been mentioned. Does not the reasoning of Agricola also indicate the cause why lime benefits sands more than clays? The latter are opened and rendered lighter by its application: and to destroy their too great tenacity, seems to be a main advantage gained by liming clay soils; whereas sandy soils are already sufficiently porous.

An old English practice of burning clay for a manure, has lately been revived in England, and with some appearance of novelty. The facts stated in regard to its operation, preclude all doubt of its efficacy. On stiff clays, it has, in the practice of some farmers, superseded the use of lime: because, although much greater quantities of it are required, yet being on the spot, in the very field where it is wanted, it is much cheaper than lime, for which the farmers are often obliged to send upwards of twenty miles.—It is said that clay thus burnt,—in which the process is so managed as to reduce the clay to the condition of ashes,—will not again, when wetted with rains, recover its original texture of a close compact substance too tenacious of water, and when dry, too hard for the roots of plants freely to penetrate. I

have called the burning of clay for manure an old English practice: for I find an account of it in the second of Dr. Eliot's Essays on Field Husbandry, written and printed in Connecticut upwards of seventy years ago. The Doctor gives a recipe, copied from an English book, for the process of burning it; which is with a *smothered fire*, a point of indispensable necessity, according to the present practice in England.

Many ways of improving lands, both in the manner of cultivating them, and in the kinds of useful plants to be introduced, have been often recommended; and certainly a spirit of improvement has been extensively excited: yet much remains to be done, to raise our crops to an equality with those in some European countries, whose lands and climates are no better than our own. But have we the means of accomplishing it? I answer, generally, that we have. Our animals for labour are equally efficient. Our instruments of husbandry are as good, or capable of being easily made so. Our husbandmen are as intelligent, and unquestionably less prejudiced, and less averse to adopt improved modes in farming. In England, a bigotted perseverance in ancient practices, however absurd, has in times past been astonishing. Her own writers inform us, for instance, that in one country all their common ploughing have long been performed with one pair of horses driven by the ploughman; while in an adjoining district four or five horses, in a single line, have been put to the plough, with the addition of a driver, and yet ploughing no more land, nor with a deeper furrow, than was elsewhere effected with one pair of horses.

But although I suppose no prejudices equally strong exist among us, still we are, I think, too prone to adhere to old usages, where no good reasons can be given for them. New practices in husbandry are often—perhaps chiefly—attempted by persons not bred to that occupation; and these, for want of practical skill, may often fail in the execution; and when successful, the success is ascribed to a

liberal expenditure of money, beyond the ability of the mere farmer. But what risk will attend experiments made by farmers themselves, to test the value of these novelties? Each one for himself can try them on as small pieces of ground as shall suit his convenience, and at a very small expense of time and money. The introduction of improvements would be facilitated, if the money expended, and especially the quantity of labour bestowed upon them, were always accurately stated, and their authenticity vouched by the names of the improvers. And if the experimenters, in these cases, who hire all the labour, and this often performed in their absence, are merely *not losers*,—practical farmers, always present, and working too with their own hands, would assuredly render such new practices *profitable*.

But I apprehend the knowledge of modern improvements in husbandry is far less extended than may commonly be supposed. That celebrated Travelling Agriculturist, the late Arthur Young, a man of science and literature as well as a practical farmer,—after visiting different districts in England, for the purpose of observing, and for the information of his countrymen describing their various modes of husbandry, commenced, about the close of the American War, his annals of Agriculture. He afterwards travelled over France and parts of Spain and Italy with the same views. Thus fraught with agricultural knowledge, he continued his labours in that work; comprehending, in addition to his own observations, useful communications from practical farmers, bearing their signatures: for it was a general rule with him not to admit any unless thus vouched: Yet, if my recollection be correct, that practical work was so little attended to by English farmers, that he once stated its sales as not exceeding 500 copies. Since then, indeed, improvements have more readily been adopted; and agriculture has advanced with an accelerated pace; and in Scotland with great rapidity. *Reading*, to obtain agricultural information, has been extended, and become fashionable; and book-farming know-

ledge is no longer despised. This knowledge is now of greatly increased value, because experiments, with a view to improvements, are not, as formerly, made at random, but on principles founded in the nature of things, and which rest on modern discoveries.

As we have no farmers who cannot read,—in order to give to all opportunities of reading, I take leave to suggest for consideration, the expediency of forming, in each township in the State, a farming society, of which the members should meet monthly, to converse on farming affairs—to make mutual communications of their practices in husbandry—to commit to writing every practice not in common use, which may be beneficially extended—and to read and examine modern publications on their vocation; particularly those of the State Society, which the Trustees would gratuitously furnish. To these, such township-societies would find it agreeable and useful to add the best periodical publications which issue from the press of our own country, either through the agency of Agricultural Societies, or of well informed individuals. With these and a few other books on the subject, each township society would become possessed, at a very small expense, of a pleasing and instructive agricultural library.

After considering the constitution of the soil he has to cultivate, the next object of the farmer will embrace the means of enriching it, and of preserving its fertility. To enrich it, manure will present itself as of the first importance; and of manures, the dung of his live stock will obviously occur as the most essential ingredient. If the manure from the droppings of his stock could easily be doubled, how great would be the farmer's acquisition? That this is practicable I cannot permit myself to doubt. I am rather inclined to think it capable of a manifold increase. At another public meeting of farmers, I had occasion to suggest some means of preserving and greatly increasing this important article; particularly during that portion of the year

when cattle are at pasture, but penned at night in the barn yard. Nothing is more common than to see these yards, after being cleared of manure for the Spring crops, left naked until autumn, without litter or mud, or earth of any kind, to absorb the urine of the cattle and to mingle with their dung; but all is left open to our burning summer suns, by which the greater part, three fourths, perhaps seven eighths, of the essence of both are exhaled and given to the winds. To prevent this serious loss, I suggested the expediency of giving to the barn yard, as soon as it was cleared out, a covering of any kind of litter, and a coat of earth, mud from low grounds, loam where attainable, or any kind of earth to which a farmer can have easy access; and that as often as once in two weeks, a new coat of earth should be introduced. Weeds from road sides and waste places would make valuable additions to the summer manure. By such means manure may be increased in a four, perhaps an eight-fold degree.

But if in addition to this accumulated summer manure, the farmer, without any of the dung or litter of his cattle, could double the quantity usually made during the winter, would he not consider himself enriched? That this is practicable will appear from a statement I shall now recite; it being the result of careful experiments made in Scotland during a period of ten years. The fact is stated in one of a series of papers written with great ability by Mr. John Young, under the signature of Agricola (already referred to) and published at Halifax. The urine of cattle produced this mighty effect. I cannot so well occupy your time as by giving the statement in his own words, as abridged by him from the Farmers Magazine, published in Scotland.

"I should be afraid (says Mr. Young) to hazard my character with the public, by stating in round and unqualified language, the value of this rich juice which is literally wasted and thrown away: and therefore I shall proceed with caution, and give a detail of facts, conclusive in their bearings.

and substantiated by the best authority. They are contained in a letter* from Charles Alexander, near Peebles, in Scotland; and are addressed to Sir John Sinclair in 1812, for publication. This intelligent farmer had long been impressed with the great importance of the urine of cattle as a manure; and he sets about to discover, by a long and well conducted series of experiments, the best method of collecting and applying it. He began by digging a pit contiguous to the feeding stall, but distinct altogether from that which was appropriated for the reception of the dung. The dimensions of this pit, according to his own account, were 36 feet square, and four feet deep, surrounded on all sides by a wall; and the solid contents were 192 yards. Having selected the nearest spot where he could find loamy earth, and this he always took from the surface of some field under cultivation, he proceeded to fill it; and found that with three men and two horses, he could easily accomplish 28 cubic yards per day: and the whole expense of transporting the earth did not exceed £4. 16. 0† When the work was complete, he levelled the surface of the heap, in a line with the mouth of the sewer which conducted the urine from the interior of the building, on purpose that it might be distributed with regularity, and might saturate the whole from top to bottom. The quantity conveyed to it, he estimates at about 300 gallons; but as this calculation was founded partly on conjecture, for he measured not the liquor, it will be better and more instructive to furnish and proceed on *data* that are certain and incontrovertible. The urine was supplied by 14 cattle weighing about 34 stone each,‡ and kept there for five months on fodder and turnips. The contents of the pit produced 288 loads, allowing two cubic yards to be taken

* “Farmers Magazine, vol. 13 page 78.”

† § 21 31 Seven days work for 3 men and 2 horses; each horse, I suppose, in a single cart, a common usage in Scotland.

‡ This would be the weight of a cow.

out in three carts;* and he spread 40 of these on each acre : so that this urine in five months, and from fourteen cattle, produced compost sufficient to fertilize seven acres of land.† He states further, that he tried this experiment for ten years, and had indiscriminately used, in the same field, either the rotted cow dung, or the saturated earth ; and in all the stages of the crop he had never been able to discover any perceptible difference. But what is still more wonderful, he found that his compost lasted as many years as his best putrescent manure ; and he therefore boldly avers, that a load of each is of equivalent value.”——“The dung pit, which contained all the excrementitious matter of the 14 cattle, as well as the litter employed in bedding them, and which was kept separate for the purpose of the experiments, furnished, during the same period, only 240 loads ; and these, at the same rate, could manure only six acres.”

On this statement one remark forces itself into notice. That for the want of such a reservoir for saving the urine of our cattle, more than half of our winter made manure, and this is the farmer's chief dependance, is lost.

It is not stated whether the pit filled with loam was or was not covered : but unless covered, rains would saturate the earth, and thus in a manner exclude the urine conveyed to it from the cattle stall. It should also be noted, supposing the pit to have been covered, that the frosts in Scotland would seldom so freeze the earth in the pit as to prevent the absorption of the urine. The frosts in Massachusetts would doubtless require that the pit should be sunk to some depth, and certainly be under cover. In a word, a barn-cellar would seem to be the proper receptacle for this important manure. How it should be arranged, must depend on the situation of the barn. In Pennsylvania, barns, which are commonly of stone, are often erected by the side of a hill, by

* This gives 18 cubic feet to each load.

† Seven Scotch acres are nearly equal to nine English and American acres.

which means a story is gained for their cattle stalls. By digging where there is a gentle slope, a sufficient excavation for a barn-cellar would be easily made, to drive in a cart on a level, for carrying in the earth in autumn, and for removing the manure in the spring. With the increased fertility of his soil, the farmer will be able to increase his live stock; and the live stock, in return, will be constantly adding to the productions of the soil.

In respect to **LIVE STOCK**, it is gratifying to see the spirit excited within the last five or six years, to attend to their melioration, by preserving some of the most promising for breeders, instead of sending them to the shambles; and by introducing from other countries some individuals already highly improved. New England was originally granted to merchants of Plymouth, in the county of Devon, in England. It is natural to suppose that some of the early settlers sailed from Plymouth, and brought with them the Devon breed of cattle. The uniform red colour of various shades, some deep red, and approaching to brown, now so commonly seen among us, are probably descendants from the Devon race originally imported. Their uniform red colour corresponds with a distinguishing mark of the Devon breed, now so highly improved and celebrated in England. Among our own, individuals of this stock might be selected, admitting, with equal care, of equal improvements, on the principles now so well understood by the eminent English breeders, who, Mr. Arthur Young has said, are indebted for them to the celebrated Robert Bakewell. On the same principles all our other domestic animals may be improved. And this course appears to me indispensable for the speedy attainment of extensive improvements of our stock, of neat cattle especially. More than one generation must pass away before highly improved races, from the few imported animals, can be generally obtained. In this important work every substantial farmer in the country ought to engage; and by their rival efforts in every county, the great object might be accomplished. Beauty of form is desirable,

and will merit attention : but strength for labour and ample supplies for the dairy, are more important. A disposition to *fatten at an early age*—a point of excellence zealously sought for in England, where husbandry labours are chiefly performed by horses, is not of material consequence to New-England farmers, where oxen for the draught and cows for the dairy constitute their most interesting stock. But what shall farmers, who live remote from a veal-market, do with their surplus calves, above the numbers of the best selected to keep up their stocks, and to supply those whose situation may induce them to purchase, and not to breed for themselves?—I will mention what was some years since stated to me as the practice of a respectable farmer in Connecticut. He had cows for a large dairy, and cheese-making was his object.—He allowed his supernumerary calves to suck their dams three days, (or until the milk was fit for the dairy) and then killed them ; taking off their skins, and giving their flesh to his store-hogs. This was to me a singular instance of practice ; but from the good sense of that farmer, I conclude he must have experienced it to be not merely a necessary but a saving practice. It may be in use among other great dairy farmers, although I do not know that it is.

The Trustees have already offered a premium to encourage the making of FINE BUTTER. But I am inclined to think it will be difficult, if not impracticable, to make any of the greatest excellence, during summer, without the aid of ice-houses or spring-houses. The city of Philadelphia is admitted, I believe, to be supplied with *some* butter, during the warm months, superior to what is found in other cities of the United States. Yet their pastures are not better than those in the vicinity of some other cities and towns. I ascribe this superiority exclusively to the spring-houses on many of the farms in the neighbourhood of Philadelphia. Pennsylvania is a well watered country. There it seems to have been an early practice, in taking up land for a farm, to search for a spring ; and as near to it as the ground would permit, regard-

less of its situation in respect to the public road—to erect the dwelling house. Here the cattle, as well as the family, would at once find good water, without the labour of digging a well. Over these springs small houses are erected, usually of stone. The room of the spring-house may be from ten to twenty feet square, according to the quantity of milk to be provided for. Trenches are made on the four sides of the floor, and bottomed and lined with flat stones. The residue of the floor is likewise paved with stones. The water from the spring enters at the side of one trench, runs all round, and at the opposite side passes away at a hole left in the wall. The under side of this hole is at such a height above the bottom of the trenches, as to raise the water just enough to keep the milk cool in the pans which are placed in it. This water runs perpetually from its source, and as constantly passes off at the outlet. In one of the trenches are also set the cream pots, and the pots with the butter the night before it is carried to market. Perhaps in the vicinity of Boston and other towns in the State, there may be some springs which may furnish the same accommodations.

Much has been said and written concerning an evil which pervades our whole country, from one extreme of the Union to another—the general use of spirituous liquors—prevailing, in the opinion of wise and good men, to a mischievous excess. Sometimes it has been hoped that Agricultural Societies might find means to check the pernicious practice. But the class of farmers who abstain from it must be too numerous to become candidates for premiums on temperance. Besides, such prudent men need no remuneration for their abstinence. Here virtue is indeed its own reward.

It is said that in France and Spain the labourers in husbandry are remarkable for their temperance: but they drink small wines instead of ardent spirits. A French gentleman who for some years was endeavouring to establish vineyards in the Middle States, particularly in Pennsylvania, once mentioned to me how cheaply the French peasantry could be re-

galed with wine, purchasing a bottle for a few pence. At the same time, in answer to my question, he admitted that such wine was not equal to good American bottled cider. It has occurred to me that nothing might be so likely to check, and in a good degree to supersede the general and excessive use of ardent spirits, as the universal introduction of

GOOD CIDER.

Were this beverage as well made as easily it might be, it would be alike palatable and wholesome; and in the end might banish spirituous liquors from the houses of the great body of our citizens. Good cider might be furnished at half the expense of strong malt-liquors; provided apple orchards were more extensively cultivated, and the fruits intended for cider properly selected. We have a great deal of bad cider, because sound and unsound apples are ground together, and no regard is paid to the fermentation, except to give it vent. No one can suppose the juice of rotten apples capable of becoming cider. But in whatever degree they are introduced, in the same degree the liquor must be debased. To make the finest cider, sound apples only should be used. But I must not enter into the minute particulars of the process of making and managing cider—it would not comport with the occasion, nor be practicable within the limits to which this discourse must be confined. I will barely suggest a few things which involve some principles.

In every orchard are found a great variety of apples generally used for cider. In New-England I presume these are chiefly wild, that is, ungrafted fruit. And I have heard the opinion expressed, that such wild fruit would make the best cider. This surely is an error. For although in a large orchard some good natural fruits may be found, yet many of the trees produce apples so small as to cost too much labour to collect them, and others have juices so meagre as when collected to be of little worth. A few sorts which in England have been celebrated for yielding the finest ciders, were always grafted with as much attention as apples designed for

the table are with us. But in England, the apples which a century ago furnished ciders of distinguished excellence,—to use the expressive words, in like case, of some of our own farmers—*have run out*. They can no longer be continued by grafting. This well known fact in that country, has led an eminent naturalist there to advance the novel doctrine—doubtless as true as novel—that trees, like animals, have their infancy, youth, maturity and old age. Grafts from the last, though inserted in young stocks, soon perish. Hence the farmers there have been seeking for fine cider fruits from new trees growing from the seeds; and when any of these are found to possess the desired qualities, they are propagated and extended by grafting.

In some parts of New Jersey, in which ciders of superior excellence are made, the farmers produce them wholly by grafting: nor can we expect fully to rival them, until we adopt the same practice.

Perhaps there are few extensive natural orchards in Massachusetts in which valuable cider fruits may not be found, with rich yellow flesh, capable of yielding liquors strong and of excellent flavour. From such trees, if still young, or in vigorous life, whole orchards might soon be formed. And probably different kinds might be selected which ripen their fruits at the times most proper for making them into cider. Apples until mellow do not attain their highest flavour; and till then cannot give the highest flavour to cider. Many reach that mellow-ripe state in October and November, which may be called the cider-making months in Massachusetts. It would require but little attention to select and propagate the best apples thus ripening in succession. Such ciders, made of ripe and unmixed fruits, would also be more easily managed in the most difficult and important part of the process of cider-making—its first fermentation; on the right or wrong conducting of which the character of the cider depends. In one case it will be soft and pleasant—in the other hard and austere.

The Trustees of this Society have, I believe for several years, been offering a liberal premium to encourage the

TURNING IN OF GREEN CROPS,

as a mode of manuring land : but I do not recollect that the premium has been claimed. It has been an ancient practice in other countries ; and is not unknown in our own country.

Dr. Eliot (whom I have already had occasion to mention) noticed it seventy years ago, in his *Essays on Field Husbandry* ; and recommended millet as a plant well adapted to that purpose. The seed being but little bigger than cabbage seed, a small quantity will be sufficient for an acre. I have often heard of the turning in of Green Crops being occasionally practised in Pennsylvania. Many years since, an intelligent man of that State mentioned to me a farmer, who had purchased a farm in a township remarkable for the general poverty of the soil ; and that he improved his own by ploughing in green crops—buckwheat, oats, rye ;—turning them in repeatedly, until the land produced crops worth harvesting. Sir John Sinclair, in his *Code of Agriculture*, speaks of the practice of ploughing in buckwheat and other crops, when manure was deficient. But he says that in Lincolnshire buckwheat had for several years been ploughed in as a manure, and ultimately given up as doing no good. He then adds—“ Unless so far as nourished by the atmosphere, the vegetables thus treated are supposed merely to restore the nourishment obtained from the soil.” And this is the very principle on which the ploughing in of green crops materially depends. The plants while growing derive a portion of their food from the air ; and being turned in, so far at least add manure to the soil. But this is not all the benefit : weeds spring up with the sown green crops, and are ploughed in with them ; thus increasing the manure, and at the same time cleaning the ground for a harvest crop. But besides the growing plants, the soil itself, under their shade, made light by the ploughing and harrowing, is also receiving a portion of the same fertilizing airs. Lord Kames, however, in his *Gentleman Farmer*, says—“ I approve not of ploughing down buckwheat, red clo-

ver, or any other crop, for manure. The best way of converting a crop into manure is, to pass it through the body of an animal. The dung and urine, not to mention the profit of feeding, will enrich the ground more than to plough down the crop." Notwithstanding these authorities—and the opinion of Lord Kames is entitled to very great respect—I am inclined to think that the circumstances and condition of many farms may be such as to render the practise eligible; particularly where manure is deficient;—and where is it not deficient? Is it not a received fact, when lands have been impoverished by cropping without manuring, that by letting them lie a few years *at rest*, they acquire such a degree of fertility as to bear a crop of some sort that rewards the farmer's toil? If this happen to unseeded land, thrown out as waste, how much sooner may it be recovered when sown with buckwheat, oats, rye or millet, and the crops when in full blossom ploughed in? If this product be small, let the land be again sown, and a second crop be ploughed in. And if a third sowing and ploughing in were given, what would be the whole expense? A trifle compared with a dressing with stable or barn yard manure—if it could be procured. This is to be carted to the field and spread, in order to be ploughed in: but the green crop is on the ground, and evenly spread, ready for the operation of the plough. But leaving all theoretical reasoning, I will recur to well authenticated facts.

The late distinguished agricultural writer, Arthur Young, Secretary to the English Board of Agriculture, so lately as the year 1811, delivered before that body an interesting lecture, to describe the husbandry and speak the praises of three celebrated British Farmers. One of these was Mr. Duckett, who occupied in succession, two "sand-farms;" that is, farms in whose soil sand was predominant. It was one of the practices of this very ingenious farmer, to plough in green crops to enrich his land. And to do it effectually, he contrived a plough with which, when drawn by four horses, he could open his furrows to the depth of eight or of ten inches, and in them perfectly bury his green crops. The opening of so deep a

furrow was called *Trench-ploughing*; and by the simple addition of an arm partly curved, and fixed on the right side of the coulter, at the desired height of eight or ten inches above the sole or bottom of the share, the growing crop was pressed to the ground; and the furrow slice raised by the plough, following close behind and turned completely over, perfectly buried the crop and weeds. This coulter of Duckett's trench plough, with the curved arm attached to it, is called a *skim-coulter*. The arm must necessarily extend so far to the right as the breadth of the furrow; and just at that extreme, I conceive, the curve downward begins, so as, when the growing crop is pressed flat, the stems or straws may not spread out any farther; and being thus confined, are completely overwhelmed. Hence there would be no vegetation in the seams of the furrows. "By means of this tool (says Mr. Young) I have repeatedly seen on his farm, stubbles completely turned down, and crops of turnips, tares and other plants instantly put in; which crops I have afterwards viewed with equal pleasure and surprize; the execution was as complete as the design was sagacious: but it went further—converting the nuisance of any weeds into manure. So effective was the work of the plough, that I once saw him turn down a crop of rye six feet high, and immediately roll in turnip seed. The effect did not depend so much on an extraordinary depth of ploughing, as on the subversion of the soil; for of the rye I have just alluded to, not an atom was left visible; and yet the depth did not exceed eight inches. But if there be Couch [twitch grass] in the soil, this ploughing is ten inches deep; and the succeeding crop in any case well hand-boed. This trench-ploughing system is not practised above once in two or three years, and the successive tillage shallow, upon the surface. By such deep ploughing, seldom given, Mr. Duckett conceived that a due degree of moisture was preserved in his light land; by means of which his crops were flourishing in seasons of drought which destroyed those of his neighbours."

Here perhaps the question will occur—Were Mr. Duck-

et's improvements adopted by other farmers? Mr. Young says they were, by some of his enlightened brethren. Why they were not generally imitated, Mr. Young ascribes (I repeat his words) to "the perversity which characterizes the ignorance of English farmers." Again he says, "If our farmers would have adopted the practices really excellent, as soon as they were known, British agriculture would forty years ago have arrived at its present state; and at this time the kingdom would have been a garden."

In connexion with this account of Mr. Duckett's practice, I take leave to suggest the necessity, or at least the great utility, of an occasional fallowing; primarily, in order to destroy the weeds which infest so many fields, and essentially injure all crops of small grain, especially spring wheat, which ripening more slowly than rye and barley, is much more oppressed by the weeds. In effecting the object here suggested, and to enrich the soil while making a fallow, I would recommend the following mode of practice. As soon as it can be done in the spring, plough, sow and harrow in the seed of the crop intended to be turned in. Weeds will spring and grow with the crop. When the latter is in full blossom, turn it in. Immediately sow for a second crop. With this also will arise another crop of weeds; and both, as before, are to be turned in. Should the season permit, and the foulness of the ground require it, sow for a third crop, to be ploughed in, like the former, before winter. A field thus managed will be in good order for a crop of barley, summer wheat, rye or oats, in the ensuing spring; and of either a comparatively clean crop may be expected.

This dressing with green crops, valuable as I conceive it to be, need not be confined to sand-farms: it will be not less beneficial in all light gravelly loams, which I suppose rather to abound in Massachusetts; certainly, stiff, clayey loams are not common.

A few concise remarks on the general principle, and on some of the objects of these annual exhibitions, will conclude this address.

It is supposed, and justly, that these public shows, by exciting an emulation among farmers, will lead to important improvements in our husbandry. The general question which the case presents, is, What will be the easiest, cheapest, and most effectual means to accomplish this great object? A principal one has been to grant premiums for the greatest crops of specified plants on given quantities of land. One pleasing result has appeared—that by ample manuring and good culture, the usual crops of the same plants may be doubled and trebled. But is it necessary to continue premiums of this kind? May not now the entire management of farms rather claim attention? Instead of numerous small premiums dispersed on a variety of objects, might they not be advantageously concentrated for the purpose here intimated—the cleanest, most economical, the most productive management of farms? *For it must be such a general improvement of the entire farm that will constitute the farmer's permanent prosperity.* The decision of claims on this ground cannot be expected to be made by a committee of this Society to travel through the whole State: but will it not be practicable by county committees? Perhaps it may not be difficult for the Trustees of the State Society to prescribe some general principles and rules of proceeding, that may produce uniformity in the reports of county committees acting under their direction.

In ploughing, the just aim must be to make straight furrows, and of a uniform breadth and depth; and so to turn over the furrow-slice as completely to cover whatever plants or manure are upon it. All this cannot be effected with a *hurried* step. And what benefit can possibly result from such a step? A farmer's oxen at the plough must labour a great part of the day properly to turn over an acre. To do this without a driver, will require a skilful ploughman and well trained oxen. To encourage the forming of such ploughmen and oxen, should, I conceive, be the sole object of ploughing matches. Working-oxen at the plough, may be considered as well trained when they obey the voice of the ploughman.

keep the track in which they ought to move, and step as quick as will be compatible with the necessary continuance of their labour. And as the annual exhibitions at this place have demonstrated the practicability of performing the *general* operations of the plough with one yoke of oxen, without a driver, it may merit consideration whether premiums should not be thus limited in all future trials with the plough. Under such limitations, every farmer who is ambitious to exhibit proofs of superiority in these points, would be sensible that his oxen must attain a certain size, and be, though not fat, yet well fleshed; which would give strength to their sinews and momentum to their exertions. With such oxen all our agricultural labours would be so well performed, that there would be no room to envy the condition of farmers in any of our sister States; in some of which, their horses consume perhaps as much grain as would furnish bread to all the inhabitants of New-England.

OFFICIAL REPORTS OF THE CATTLE SHOW AT BRIGHTON,
OCT. 9th and 10th, 1822.

No. I.—ON ALL THE LARGER HORNED CATTLE, (*except Heifers.*)

THE Committee report, that the animals in this branch of live stock, were unusually numerous and good, proving, that a gradual and regular improvement is steadily, and as rapidly as could be expected, taking place. The number of entries for premiums, in this department alone, amounted to 42, and of individuals (many entries comprising more than one) to 52, while the whole number of premiums offered, and granted, are only 10, so that four-fifths of the competitors were necessarily thrown out. This is inevitable, unless our funds should be exceedingly increased, or unless we should make our premiums smaller and more numerous. This

might be liable to great objection, by extending rewards to animals of inferior merit, and thus diminishing the motives to make the breeds as perfect as possible. While the beneficial effects of the liberal premiums offered by the Society, for the importation of the most improved breeds of foreign countries, are every year evinced by the crowds which, from the beginning to the end of our shows, gather round the imported animals, and their improved progeny, we ought never to forget the sound advice of the venerable farmer who addressed the Society this year, "that the progress of improvement by foreign crosses must be very slow;" and possessing as we unquestionably do, the materials among our own stock of improving our breeds by careful selection, we should follow the example of Bakewell and the other British farmers, who in fifty years have raised the stock of Great Britain to a state of perfection little short of what it is supposed they can ever reach. And, who at the late show had the pleasure of viewing those fine animals, Denton and Cœlebs, could doubt whether they were superior to any animals of the same description now to be found in New-England? And why is this the case? Assuredly our pastures are as fine, and the race has not degenerated with us. Wherever a pride is felt in raising fine stock, our success is perfect, and the single town of Sutton might send its team of 120 oxen and challenge Devonshire or any other county of Great Britain, to trials of strength or activity.

Let us then, on this occasion, earnestly solicit our farmers to select and propagate only the best individuals of their horned cattle. If they reply, we feel no encouragement to do this, because we find the improved crosses always preferred at your shows, we reply; that though this is partially true, it is not entirely so, and what would the farmer have us do on such an occasion? If, in fact, the full-blooded or half-blooded descendant of imported stock is superior, shall we refuse to admit it *so* to be? This would be indeed sacrificing the best interests of our country in relation to this object, as

well as violating our solemn pledges, to gratify an improper national prejudice. Our true course is to strive to equal or surpass the foreign races by selections and careful management of our native stock. It was upon this principle that our manufactures have been built up on the only solid foundation. Instead of complaining that foreign goods were preferred, our citizens have exerted themselves to make our own *better* as well as *cheaper*; and let Manchester and Yorkshire beware, lest they find themselves not only shut out from our markets, (not by prohibitions but by skill and industry) but eventually rivalled in those of foreign countries. These preliminary remarks are not only intended to allay any feeling of discontent at our preference of the best stock, from whatever country it may have been originally derived, but to encourage our own farmers to take more efficient measures for the amelioration and improvement of our own native breeds. They cannot attend one of our shows, without perceiving the *public preference* for the new races, and this is a strong confirmation of the justice of the decisions; though we are aware that it is not the least difficult task of the Committee, to endeavour to decide without any bias from this clearly pronounced opinion.

We have said, that the imported stock and their progeny have usually been preferred by the visitors at our shows;—we would make *one exception*, and that is, with respect to milch cows. Although the milch cows of Great Britain and the Netherlands are *in general* far superior to our own,—yet during the six years in which I have had this duty to perform, I have never seen an imported cow of equal merit (taking the positive evidence of qualities, the quantity and quality of milk into view) with some of our own which have been offered. So fully am I convinced of this truth, as well as that our country possesses a very considerable number of these fine cows, that I am persuaded, that, if Great Britain or the Netherlands were to send us ten

cows each, of the best quality, New-England alone could furnish twenty, which would equal them in the quantities of milk, butter and cheese, which they would respectively produce. If this should be true, and I have no doubt of it, we at least possess means by which an improved race might be procured. This opinion is not expressed lightly. We infer its truth from an examination of the products of foreign cows, thought to be so extraordinary as to merit notice in their periodical journals; and during our short period of exhibitions, we have had several, which have equalled the best, of which any accounts have been published. But we would wish, that it should be distinctly understood, that we refer only to a small part of our milch cows, and that we fear much the greater number are lamentably poor. We are well convinced, that some dairies in our country, with two good cows, produce as much as the *average* of those which have five. If we are correct, or nearly so, in the opinion above expressed, how does it happen that our breed of cattle on the whole is so inferior? Because the owner of a good cow, instead of putting a proper value upon her, will generally send her to the nearest scrub bull, to save a little labour, and some trifling difference of expense. This we all feel and know to be true. But this negligence is giving place to more judicious measures, owing principally to the effect of the public shows. If every owner of a good, and very superior cow, would consider her in a proper light, not merely as a valuable animal during her life, but as capable of improving his whole stock—if he will spare no moderate expense in procuring calves from her, from bulls of an improved breed, we shall soon see our whole stock gradually improve. Bakewell and Princeps, among the most distinguished raisers of stock in Great Britain, lived to see their improvements eminently successful. We are fully aware, that all this exhortation and argument is of very little importance, compared with the more substantial proofs *derived from prices*. When, therefore, our farmers learn, that

a calf of six months, has been sold at the price of four ordinary cows, of five years old, who have consumed twelve tons of hay, including pasturage, and have required great labour in attending on them; when they hear that an excellent judge offered fifty dollars for a two months calf, of the cow herein after mentioned, owned by the Hon. Mr. Gray, they produce more solid conviction than any thing we could urge.

Before we announce the premiums, we would express the thanks of the Trustees to those gentlemen, who without claiming any reward, and purely with the view of giving aid to the show, exhibited fine animals at no small expense and trouble. It is probable as the Committee took no minutes of these animals, some of them may be overlooked. *One* we could not forget—the fine imported bull Denton, belonging to Stephen Williams, Esq. of Northborough. He has improved with age, and shows that he has an owner who is sensible of his great value. Nor could any one overlook Cœlebs, owned by Major Jaques, of Charlestown. If there had been no other animals on the ground, those who are fond of viewing fine natural productions, would feel that a visit to Brighton would have been well repaid by the sight and comparison of these animals, differing considerably to be sure, but each very remarkable for beauty. There was also a fine imported cow, with her calf, lately bought by the Hon. Mr. Gray for \$200. Such liberal prices will ensure a constant and gradual improvement of our stock. It is said that this cow is very remarkable for the quantity and quality of her milk—we have heard that she had given in England 36 quarts per day, but there was no person to give us any accurate account of her. Capt. Tracy, of the London Packet, added a new proof, to the many he has already given, of his zeal for the promotion of the Agriculture of his country, by exhibiting three young horned animals, just imported by him. Major Jaques also exhibited three fine cows, without asking a premium.

After so long a trial of the patience of the competitors, by these introductory remarks, many of which competitors will, however, be *disappointed quite as early* as they would wish.

The Committee awarded the premium:

For the best fat ox, 6 years old, to Oliver Starr, of Deerfield, weighing 2333 pounds, \$40

For the next best do. 6 years old, to Lewis Barnard, of Worcester, weight 2256, 30

For the next best do. 5½ years old, to Amos Davis, of Groton, weight 1992, 20

For the best bull, to Major S. Jaques, of Charlestown—weight 1243—15 months old, 30

For the next best do. to Joshua Coolidge, of Wattertown, by *Calebs*—weight 735—7 months and four days old, 20

For the best bull calf, to Uriah Manning, of Woburn, being the progeny of *Calebs*, 15

For the next best bull calf, the progeny of *Denton*, to the Hon. Levi Lincoln, of Worcester, 8

For the best milch cow, to John Barr, of Salem, 30

For the next best do. to Samuel Murden, of Milton, 20

For the next best do. to the Hon. John Welles, of Dorchester, 15

As to milch cows, one of the most important, as well as most difficult articles to decide upon, the Committee proceeded, as they will probably hereafter always proceed, solely on evidence as to the *actual* product. The clearer this evidence, the more certain the success. The goodness of a milch cow depends on so many circumstances, and all of them so important, that the Committee are obliged to extend their inquiries very far. Form and beauty is of some moment, but it is also sometimes fallacious; and no one would reject a fine cow, which should give an uncommon quantity of fine milk—butter superior in quantity and quality—continue to give milk every year, till within one week of calving, merely because she had a

great head, or a large frame, or small teats, or, in short, because she had not any one of the *fine points* described in the "Complete Grazier." In this, as in every thing else, we must not always trust wholly to the *exterior*.

It has been usual to notice those animals of considerable merit, which deserved attention, but did not obtain premiums. I have never been satisfied with this course. Its tendency is in some degree to lessen the value of the rewards we bestow, if we praise too much those which were not successful; and after all we only shift the mortification, and make it fall with more severity on the greater number whose animals are *not* noticed—but as it is the usage we comply with it. There was a very fat ox presented by Mr. Savary. He was fatter than some of those which obtained the premium, but the difference of the age decided the question against him. There were fine bulls offered by Mr. Warren, Mr. Ward, Mr. Rice, Mr. Patch, of the fine native breed, so often noticed by us—and by Mrs. Amory, of the Cœlebs breed, one of which took a premium last year. There was also a superior Holland Bull, imported by Mr. Forrester, offered for exhibition only.

The best bull calf, not noticed in the premiums, was Mr. Lee's, of Brooklyn, Maj. Jaques' and Dr. Chaplin's. Many others were also very fine.

Of the cows, Capt. Inglee's, of Dorchester, was very remarkable—and also Mr. Brigham's, Job Ranger's and H. Warren's, both of New Braintree—but we have already explained the principles of our decision as to milch cows, which we hope will be satisfactory.

The Committee have endeavoured to give general satisfaction, and if they have failed of that, they will at least have the pleasure of having satisfied themselves.

JOHN LOWELL, *Chairman.*

No. II.—ON THE SMALLER ANIMALS.

The Committee of the Massachusetts Society for the Promotion of Agriculture, appointed to decide on all the smaller class of Animals including heifers,

REPORT:

That twenty-five animals of the class of "heifers, of from one to three years old," were in the pens for premium or exhibition—all of an excellent quality, and most of them of approved breeds; and generally indicating the increasing attention of the agricultural interest to this important class of stock. The general improvement in this class of animals, compared with our former Cattle Shows, was very marked and decided.

The first premium was awarded for a heifer owned by Henry Rice, Esq. of Marlborough. She was of the breed of "Denton," the celebrated imported bull owned by Stephen Williams, Esq. of Northborough. This heifer was two years old on the first of February, from a cow of the Princeton breed; her form and figure strongly indicative of her sire. The heifer suckled only twelve weeks, has had no other keeping than common pasturage and *meadow hay* in the winter. She calved in May; at six weeks her calf weighed 33 lbs. the quarter and never took all her milk until it was five weeks old. This heifer has given from twelve to fourteen quarts of milk during the season, \$15

The second premium was awarded for the heifer owned by Mr. Samuel Brooks, of Brighton, who had also received no extra keep, and was a beautiful sample of the approved Holderness breed, introduced into the state by Gorham Parsons, Esq. 10

There were other distinguished animals of this class, which deserve particular notice, and were highly approved. Such were that belonging to Mr. Wheeler, of Framingham, also

of the Holderness breed ; and those presented by the Hon. Mr. Lincoln, also of the Denton breed, and were animals of beauty and promise.

Five heifers belonging to the Hon. Mr. Welles, of his own improved stock, which has on former occasions had distinguished notice by committees of this society.

To these ought to be added the heifer of Mr. Coolidge, and that of Francis Amory, Esq. from Major Jaques' imported bull Cœlebs ; and also those of Mr. John Breed, of Belle-isle, from Mr. Thorndike's bull "Fill Pail," all partaking of the excellent and peculiar qualities of their respective breeds.

The Committee also award for the best Boar,

The first premium to Joseph Rice, of ———, the
sum of \$10

The second premium for the best Boar, they award
to Mr. Spark Vose, of Watertown, the sum of 5

The first premium for the best Store Pigs, they award
to Mr. Luke Fiske, of Waltham, the sum of 10

The second premium for the best Store Pigs, they
award to Mr. Aaron Dow, of Brookline, the sum of 5

The first premium for the best Merino Ram, they
award to Gorham Parsons, Esq. 15

The Committee regret to observe that the general specimens of Merino Sheep exhibited for premium were in their opinion inferior to those of former years. They feel themselves justified only in awarding a second premium for the best Merino Ewes, to Gen. Austin, 10

The second premium for Merino Wethers they award
to Francis Amory, Esq. 10

For Native Wethers there was no competition. Those presented by Mr. Silas Hall, of Phillipston, were very fine animals, and deemed worthy of the first premium, which the Committee accordingly award, of 10
[Upon condition that he give evidence according to the rules, that they were wholly bred in this State, and raised by the persons exhibiting them.]

A pair of Stags were presented by Mr. Meriam of Concord, as a specimen of a new mode of altering cattle; and which he represented as easier, equally effectual, and less dangerous than the ordinary method. Your committee were not authorized to grant any premium on this account. Nor can they recommend any to be given, without a more satisfactory evidence of the success of the operation and of all the advantages specified. Should this be the case, at any future time, it will always be in the power, as they doubt not it will be the inclination of the trustees, to grant a just reward for this, as well as for any other successful improvement in the important operations of agriculture.

Mr. Meriam also presented several spayed sows, for the society's premium for animals of that description; but they were not accompanied by any statement of the mode of operation and treatment, as required by the rules established by the Trustees, and besides, the operations were very recent, and apparently, some of them at least, done expressly for the exhibition, and for the purpose of offering for the premium. Now in a case of this nature, when a premium is proposed expressly for the purpose of testing the efficacy of an important, and in this country, in some respects, a new operation, your committee apprehend that no premium ought to be granted, unless by well attested experiments, supported by a lapse of time sufficient to leave no question of the result.

Mr. John Baker had entered also four spayed sows, belonging to Gorham Parsons, Esq. for the premium proposed for the same operation. They were in fine health and completely healed—neither disfigured or weakened by the operation. A certificate also accompanied, made by Gorham Parsons, Esq. which will be laid before the Trustees for their consideration, conformable to their proposal, and in case the same shall be considered, or shall be made satisfactory to them, they in such case award to Mr. Baker the premium of

Samuel Jaques, Esq. also presented for the Society's premium, of the improved Leicester breed of long-woolled Sheep, having a cross of the South down, one Ram and six Ewes. They were bought by him in Pennsylvania, and from thence brought into this State. Although your Committee know that the intention of the Society, in the proposal offered in the terms of that premium, was, to encourage the importation of the animals from some foreign kingdom or state—and that therefore, strictly speaking, Colonel Jaques would be entitled to no premium on the terms of those proposals; yet your Committee consider the animals are in this State a new and very important race of Sheep, although precisely not of the description proposed, and that Col. Jaques has at considerable expense and trouble, introduced them into it. They, therefore, recommend that a premium be granted to him of \$50

The Hon. Thomas H. Perkins, Esq. also presented for exhibition, a Ram and two Ewes of the long woolled Sheep of the Netherlands, the length of whose wool was greatly superior, and its fineness but little inferior, if at all, to those of our present breeds. And although it was not the intention of that distinguished merchant to stand candidate for any premium, his sole purpose being to aid in the improvement of our breed of Sheep, and thereby to encourage the agriculture and manufactures of his native State, yet your Committee, apprehending that all exertions of this kind, so honourable to the individual, and so advantageous to the community, should receive some mark from our Society of its sense of the benefit conferred on the Commonwealth, they therefore recommend that the Gold Medal of the Society, of the value of fifty dollars, be presented to Mr. Perkins, for this distinguished and successful effort to improve the breed of Sheep in Massachusetts.

JOSIAH QUINCY,
NATHANIEL INGERSOLL,
THOMAS WILLIAMS.

No. III.—ON MANUFACTURES.

THE Committee on Manufactures award :

The first premium for Broadcloths, to James Shepherd & Co. of Northampton, \$30

The second premium for Broadcloths, to the Wolcott Woollen Manufacturing Co. 20

The first premium for Household Cloth, to Jonathan Mann, of Worcester, 12

The second premium for do. to Stephen Buttrick, of Framingham, 8

The first premium for superfine Cassimere, to the Wolcott Woollen Manufacturing Co. 15

The second premium for do. to James Shepherd & Co. of Northampton, 10

The first premium for Superfine Satinet, to Daniel Ellis and Son, of Walpole, 10

The first premium for fine Flannel, to James Howorth, of Andover, 10

The first premium for Carpeting, to Sarah Patrick, of Worcester, 15

The second premium for do. to Adolphus Bartholomew, 7

The first premium for Linen Cloth, to Anna R. Putnam, of Grafton, 8

The first premium for Diaper, to Mrs. Putnam, 10

The second premium for do. to Susan Young, of Newbury, 5

The first premium for Sewing Silk, to Lemuel Healey, of Dudley, 5

The second premium for do. to Caroline Bronsdon, of Milton, 3

The following gratuities are also awarded :

To Clarissa Fay, of New Braintree, for a very good specimen of fine Flannel, 5

A premium being withheld on account of a deficiency in the number of yards, the Committee recommend the gratuity in consideration of the excellence of the fabric and the importance of the manufacture.—And for the same reasons a gratuity of \$5

• To Susan Warren of Chelmsford, for a picce of Lin-en of household manufacture. 5

To George Johuson, of Solem. for a specimen of Duck by machinery of recent invention, 10
[This Duck is thought superior to any brought to this market from Europe, and can be afforded at a price advantageous to the purchaser. The character of the machinery employed, and the quality of the article, afford a hope that duck may become one of our staple articles.]

To Gerry Fairbanks, of Boston, for fine Beaver hats, \$20
[Hats of the same quality are still imported. The committee have therefore recommended a liberal gratuity in this case, as there is both stock and skill enough in the country to put a stop to the importation.]

At former exhibitions the imitation Leghorn Hats have been of a medium quality; this year there was one specimen from Vermont perhaps finer than any ever imported. As it was manufactured in another State, the committee are not authorized to do more than to commend the excellence of the fabric.

For other specimens of Straw and Grass manufacture, they recommend gratuities as follows :

To Ann Dalrymple, of Marlborough, for Straw Bon-nets, \$5

To Miriam Haven, of Hopkinton, for do. 5

To Sally & Eliza Perry, of Brookfield, for a Grass Hat, 5

To Betsy Bennet, of Framingham, for an imitation Leghorn Straw, 5

To Susan Sherman, of Marlborough, for do. 3

To Mary and Hannah Dobben, of Beverly, for Straw Bonnets, 3

Gratuities to the following persons are likewise recommended for their specimens of ingenuity and industry :

To Fanny Pierce, of New Braintree, for a counterpane and coverlet, 5

To Sally Penniman, of do. for a hearth rug, 3

To Caroline Fiske, of Waltham, for a counterpane 3

To Susan Sterns, of Waltham, for a knit mantle of cotton yarn, 2

To Mehitable R. Dean, of Mansfield, for a hearth rug, 3

To Priscilla Cotton, of Plymouth, for a hearth rug, 3

To Samuel B. Pope, of Boston, for a specimen of men's boots, 5

To Ann Heath, of Roxbury, for specimen of fine cotton hose, 5

To Rebecca Johnson, of Boston, for a hearth rug, 3

To Sarah Glover, of Dorchester, for a cotton counterpane, 6

To Rhoda Holman, of Bolton, for a fabric of silk weed, 2

To Levi Sawyer, of Bolton, for woollen hose, 2

To a female of Boston, for a very fine hose of merino wool, 2

To Sarah Moore, of Brighton, for fine down tippets 2

To Sarah, Polly and Hannah Lewis, for various articles manufactured from Down, and for *Artificial flowers*, 6

To Nancy Wheeler, of Worcester, for Fans manufactured from feathers, 2

Messrs. Barrett, Tileston & Co. of Staten Island, presented for inspection some very handsome Woollen Table Cloths and Silk Handkerchiefs as specimens of their work in the art of Printing and Dying. These deserve mention as highly creditable to the taste and skill of the manufac-

turers. The Handkerchiefs exhibited were originally striped and crossbarred silks. They were shop goods damaged; the original colors were extracted; they were re-dyed and printed as exhibited.

With respect to the progress of our principal woollen manufactures, the Committee think it may be useful on this occasion to remark, that Flannels of every degree of fineness required for home consumption, may be manufactured at reasonable prices with the machinery and skill now in the country. That our best cassimeres are substantial, well made and well finished, and approach nearer to those of first quality made in England, than our best broadcloths do to the best of that country.

That our best Broadcloths are improving progressively with the gain of experience, and faster as respects goodness and the style of finishing, than fineness, and there is still room for improvement in the dyeing and dressing.

There were no extra fine Broadcloths at the exhibition. This may be accounted for without discrediting the manufacturers, by adverting to the fact that there is a full demand for cloths of a medium quality, at prices which give a large profit; the manufacturers are under no inducement therefore to attempt extra fine cloths. However much it might gratify our pride to see cloths of this description spread before the public at our annual exhibitions, it is neither for the interest of the manufacturer nor of the country, that it should at present be gratified. The best cloths shown at the hall this year, were some pieces from the Litchfield Woollen Factory in Connecticut, offered not for premium, but for exhibition; and these were thought by the Committee deserving of an honorable mention on this occasion. No Cotton Cloths were exhibited; and this among other circumstances may be considered as proof that they require no encouragement beyond that afforded by the present good market.

RICHARD SULLIVAN, } Committee.
WM. LAWRENCE. }

Brighton, Oct. 10, 1821.

No. IV.—INVENTIONS.

THE Committee of the Massachusetts Society for the promotion of Agriculture, to whom was referred the subject of Inventions, report :—

That they have had the gratification of inspecting a number of machines connected with the facilitating manufactures and the labours of agriculture, which have been deposited in the society's room, but none coming within the exact terms of their commission, except a Cast Iron Roller, which was duly entered for premium by Aaron Willard, jr. of Boston. This roller is apparently an improvement on the ordinary roller. It consists of two rollers moving upon one axis, and thereby turns easier and makes less ridges. But the owner not being present nor any person in his behalf, the Committee have not been able to make those inquiries which are necessary to enable them to award any premium.

The next machine presented for their examination and entered for premium, was a Vertical Family Spinner, invented by John Brown, of Providence, and presented for premium by J. R. Newell. It is apparently capable of spinning with from six to twelve spindles, and it was stated to your Committee that a girl of fifteen years of age of common capacity, is capable of tending it; that the thread may be gauged at any number which may be wanted. The size is very compact and takes up a less number of square feet on the floor, than a common spinning wheel. But the Committee had no certificate of its power, or evidence of its being used in any family, and found to be by experiment capable of facilitating domestic spinning. In their opinion this is the only test of its real utility. They think it a sufficiently simple and ingenious machine. But whether it will perform all that it is promised, your Committee are for the reason above stated, not able to decide; and the ma-

chine not being within any of the specified objects of premium, your Committee do not deem themselves justified in recommending, under these circumstances, any specific premium.

The machine which most attracted the attention of our Committee, was one presented by Joseph Pope, Esq. of Boston, a gentleman long known to the public by his inventions and mechanical ingenuity. This machine is patented; intended to work by hand, in its present model, but easily capable of being enlarged and applied to a horse power.

The material to be threshed, passes through opposite sets of surfaces placed transversely in a frame. They are respectively moving rods; and constitute a threshing power on an open floor composed of stationary rods.

It was stated to your Committee that it threshed 50 bushels of grain in 12 hours; and 4 bushels and 12 quarts of oats in 1 hour; and that a common sized sheaf passes through it and is completely threshed in 1 minute. The labour is done by two hands, one destined to turn it, the other to feed it, or one man and two boys are sufficient for the same purpose.

In the experiment made before the Committee, it threshed the grain out perfectly. And it is obvious that with a very small expense, it may be converted into a machine for cutting straw without any injury to its threshing power.

Owing to an accident, for which the owner of the machine is not responsible, it was not duly entered, although it was brought to Brighton and deposited in the society's room in proper season for that purpose.

As your Committee consider the machine as likely to be very useful, and as Mr. Pope has been at great expence and trouble for the purpose of bringing it to Brighton, your Committee apprehend that some notice ought to be taken of it, and they therefore recommend that he should have a premium of \$20; he producing the requisite certificates of its being used and approved by a practical farmer.

Mr. Newell also presented for premium, a Corn-Sheller, on a horizontal movement, on a wooden barrel.

The Committee did not see its power, but apprehend it may be made a useful machine, with some improvement, but do not consider themselves authorized in its present state to award a premium.

The same gentleman presented for exhibition a number of excellent and approved English machines, and also some of the invention of this country, among these they notice

An English Turnip Cutter.

Three Double Mould Ploughs.

Batson's Scarifier.

Batson's Cultivator.

Howard's Patent Plough.

Also, an English Hay Maker, sent from Baltimore. All of them are worthy of the attention of gentlemen, interested in improving the agriculture of the country, and their being brought to Brighton for exhibition does great credit to the attention and zeal of Mr. Newell.

A Patent Threshing Machine, invented by —, and also a Patent Hulling or Smut Machine, accompanied by strong and numerous printed recommendations, were presented for the inspection of your Committee, but they had no opportunity to judge of their respective operations.

JOSIAH QUINCY,
CYRUS ALGER,
PAUL MOODY.



No. V.—WORKING OXEN.

THE Committee appointed by the Massachusetts Society for Promoting Agriculture, to decide on the claims for premium for the best *Working Oxen*, at the Cattle Show at

Brighton, Oct. 10, consisting of John Welles, Silas Gates and Elijah Perry, report :—

That they were well pleased to find amongst the other distinguished evidences of improvement at their show, an increased number of Working Cattle, superior to any previous exhibition.

Twelve yoke of Working Oxen were entered and appeared to contest for the premiums offered by the Society.

The Cattle were in general in their training more perfect, and the committee feel confident that the community may look forward to the most gratifying results.

After taking into view the *strength* in reference to their *age* and *size*, the *equality of match*, the *docility* and *training*, as well as other *general circumstances*, the Committee unanimously agreed to award the following premiums :

To Luther Whitney, of Sutton, first premium,	\$30 00
To Peter Darling of Sutton, second premium,	25 00
To John Sherman, of Sutton, third premium,	20 00
To Daniel Marble of Sutton, half of the fourth premium,	7 50
To Jonas L. Sibley, of Sutton, the other half of the fourth premium,	7 50
To Capt. Joseph Curtis of Roxbury, the fifth premium,	10 00

The Committee were all pleased to see so favourable an illustration of the benefit of the Ox Team, as was generally presented ; the use of which cannot but be considered as promoting one of the most essential interests of the state.

To the honour of a small but respectable section of the country, the town of Sutton, it receives a principal part of the premiums of the Society. But it is believed that no man will doubt the distinction is well merited. It is to be hoped that other parts of the state will feel excited to such an exertion, as will spread the evidences of our farmers care and skill more equally over the state, and thus the

great object of the Society in the advancement of the honour and interest of the Commonwealth be promoted.

(Signed)

J. WELLES, *Chairman.*

No. VI.—PLOUGHING MATCH.

THE Committee on the Ploughing Match, consisting of John Prince, Benjamin Goddard, and S. G. Derby, having attended the duty assigned them, beg leave to report:—

That the ground selected for the purpose by the Committee of Arrangements, was a very tough green-sward of 20 years lay, and had been chiefly used as a pasture for fat cattle, was previously laid off in lots of sixteen rods long, and one and a quarter rods wide, making one eighth of an acre, (which was less than was wished, but being the only spot convenient that could be procured, could not admit of their being larger)—the soil excellent and free from stones or trees, and each team had a perfectly equal chance. The ploughs were duly entered for the contest, and the ploughman drew for lots as follows:

No. 1.—Aaron Davis Williams, of Roxbury, one pair of oxen, Lewis Bliss ploughman, David Howe driver—Warren's Dedham plough, with wheel and cutter—18 furrows—finished in 34 minutes.

No. 2.—Jonas L. Sibley, of Sutton, one pair of oxen, Samuel Sibley ploughman, Peter Darling 2d, driver—Common Sutton plough, with wheel—17 furrows—23 minutes.

No. 3.—Stedman Williams of Roxbury, two pair oxen, Stedman Williams, ploughman, Samuel Prince driver—Warren's of Dedham plough, with wheel—18 furrows—26 minutes 30 seconds.

No. 4.—Joseph Curtis, of Roxbury, two pair of oxen, Luke Rollins ploughman, Amos Wyman driver—Warren's Dedham plough, with wheel and cutter—20 furrows—27 minutes 30 seconds.

No. 5.—Luther Whiting, of Sutton, two pair oxen, Royal T. Marble ploughman, Luther Whiting driver—Sutton plough, with wheel—16 furrows—30 minutes.

No. 6.—Aaron D. Williams, of Roxbury, one pair oxen, Thomas Howe *ploughman and driver*—Warren of Dedham plough, with wheel—19 furrows—46 minutes.

No. 7.—Silas Dudley, of Sutton, two pair oxen, Silas Dudley ploughman, Joseph Dudley driver—Warren of Dedham plough, with wheel and cutter—17 furrows—26 minutes.

No. 8.—Isaac Cook, of Brookline, one pair oxen, Caleb Miller *ploughman and driver*—Warren of Dedham plough, with wheel and cutter—19 furrows—33 minutes.

No. 9.—Moses Seaver, of Brighton, one pair oxen, Moses Seaver ploughman, Benjamin Porter driver—Howard of Hingham's plough with wheel—20 furrows—24 minutes.

No. 10.—John Sherman, of Sutton, one pair oxen, Asa Cummings ploughman, John Sherman driver—Sutton plough with wheel—18 furrows—22 minutes.

Previous to the ploughing, it was distinctly stated by the Committee, that the furrow must be no less than 5 1-2 inches deep, and their greatest wish as little to exceed 10 inches in the width of furrow as was possible, and not to hurry their cattle, as they conceived the *best work* could not be performed if over driven—and that goodness of work, together with that of the savings of the labour of the cattle, would be a great object in deciding premiums, as well as cheapness of labour.

They have great pleasure in stating, that the work was well done, and most of it in a superior style, and that the reason for not extending their rewards was because the Committee had it in their power to award only three among ten claimants—indeed, they conceive praise is due to all the ploughmen, who discovered great skill in the management of their implements, and the cattle were universally excellent—and in consequence of the request of the Committee that they should not be hurried, they could gen-

erally have proceeded in another one eighth of an acre with ease.

The Committee have been unanimous in their awards after a very critical examination, as follows :

1st premium to Isaac Cook,	\$20
Caleb Miller, ploughman	10
do. do. driver	5—35
2d premium to Joseph Curtis	12
Luke Rollins, ploughman	6
Amos Wyman, driver	3—21
3d premium to Stedman Williams,	8
do. do.	4
Samuel Prince, driver,	2—14
	<hr/>
	\$70

All which is submitted,

JOHN PRINCE,
BENJAMIN GODDARD,
SAMUEL G. DERBY.



NO. VII.—AGRICULTURAL EXPERIMENTS.

THE Committee on Agricultural Experiments, to whom was also committed the inspection of sundry articles of Manufacture, for which premiums were offered, report :—

That five several parcels of Cheese, of more than one year old ; and seventeen parcels of new Cheese, were offered for the Society's premiums ; which, in the opinion of your committee, are superior to any hitherto exhibited ; all made in the town of New Braintree, in the County of Worcester, excepting one parcel of five cheeses, made by Mr. John Ayres, of Oakham, in the same county ; of the former, that from the dairy of Capt. John Hunter, was considered to be the richest and best made cheese, and is

entitled to the premium of ten dollars; that from the dairy of Capt. Ebenezer Tidd, the next best, and is entitled to the premium of five dollars. Of the new Cheese, that from the dairy of Mr. William Earl, was considered to be the best, and is entitled to the premium of ten dollars; that from the dairy of Major Roswell Converse, the next best, and is entitled to the premium of five dollars.

Several parcels of fine flavoured Butter were also exhibited, uncommonly well made, the buttermilk being more perfectly expressed than usual; that from the dairy of Miss Mary Clark, of Watertown, in the County of Middlesex, was considered to be the best; that from the dairy of Col. Stephen Hastings, of Sterling, in the County of Worcester, the next best—the former is entitled to the premium of ten dollars, and the latter to the premium of five dollars.

For the greatest quantity of Butter and Cheese, made between the 15th day of May, and the first day of October, from not less than four cows, the quantity of the Butter and of the Cheese, and the number of cows, to be taken into consideration, Mr. William Earl, of New Braintree, has exhibited sufficient testimony, in the opinion of your committee, to entitle him to the premium of twenty dollars.

Messrs. Brewer & Jordon, of Roxbury, are entitled to the premium of ten dollars, for the best specimen of soal leather; for the next best specimen, Messrs. Benjamin Mirick & Co. also of Roxbury, are entitled to the premium of five dollars.

Five barrels of Flour, from the wheat raised the present season, on the farm of Gorham Parsons, Esq. in Brighton, and manufactured at the "City Mills," lately erected on the "Western Avenue," very little inferior in quality to the best made Philadelphia flour, were exhibited by Mr. Benjamin T. Reed, Agent of the Proprietors of said Mills, and are entitled to the premium of twenty-five dollars.

A sample of Starch, in imitation of the Poland Starch, manufactured by Mr. Robert Hewes, of Boston ; and a sample of Mustard, manufactured by Mr. Abraham Bickford, also of Boston, were exhibited—both appeared to be of a very good quality, perhaps equal to any imported ; no premiums the present year, for either of these articles, were offered by the Trustees.

The vegetables brought to the Society's Hall very far exceeded in quantity, variety, and size, those exhibited in any former year. The roots of Mangel Wurtzel, sent by Dr. Chaplin of Cambridgeport, were very large, and in great perfection. The Doctor also presented to the Society a very fine Watermellon, from his own garden, which weighed about twenty-three pounds. From the farm of Edward Sparhawk, Esq. of Brighton, some "Silverskin" Onions, uncommonly large. From the garden of Mr. William Ackers, of Brooklyne, some roots of the common red Beet, of an early kind, and of a size seldom equalled. Mr. Josiah Coolidge, of Cambridge, and Mr. Samuel Murdock, of Milton, exhibited some very large Winter Squashes. One from the farm of the former weighed forty-seven pounds. From the farm of Gen. Hull, in Newton, some Carrots, Ruta Baga, and English Turnips, all of them very large, "taken from a field of two acres, without any cultivation, but what was common to the whole field." From the farm of Capt. N. Ingersoll, of Brooklyne, some Arrak, being a new variety of the Carrot. From the orchard of Mr. Henry Houghton, in Bolton, in the County of Worcester, some Blue Pearmain, which were supposed to weigh not less than one pound each. From the garden of James White, Esq. in Dorchester, in the County of Norfolk two specimens of the Cotton Plant, which grew in the open air, without particular care ; one of which was Sea Island, the other Upland. The pods on both were well filled with Cotton.

From the farm of Capt. Joseph Warren, in Brighton, some ears of Corn, said to be of a very productive kind, "from three stalks ten ears were taken." From the orchard of Col. James Wilder, in Sterling, a very large fine Apple, called "Eve's Apples." From the farm of Dr. Eliakim Morse, in Watertown, some fine ears of the eight and twelve rowed Indian Corn.

By order of the Committee,

THOMAS L. WINTHROP, *Chairman*.

Brighton, Oct. 9th, 1822.

The Committee on Agricultural Experiments submit for the consideration of the Board the following, in addition to their report dated the 10th day of October last, to wit ;

That Col. Joseph Valentine, of Hopkinton, is entitled to the society's premium of \$30, for having raised the greatest quantity of Indian Corn, being 119 bushels and 26-32 of a bushel, on one acre of land. "The soil is a deep yellow loam; in 1821, the land was cultivated with Indian corn, and manured with ten cart loads of green barn manure, spread on the ground, and eight loads of compost manure put in the hills. In the spring of 1822, the ground was twice ploughed, and 20 cart loads of green barn manure spread on it; it was then furrowed in rows about three feet and a half apart; and about 20 cart loads of barn, hog and slaughter yard manure, were put in the rows; the last mentioned manure was mixed together with one hog-head of Smithfield lime; the seed was the Brighton twelve rowed yellow corn, the kernels placed about 3 inches apart each way; the corn was hoed three times, all the suckers were pulled out in July; and in August all the suckers were again taken away, together with the false stalks, and those that were smutty; on the first of September the stalks were topped; and on the 26th the corn was harvested, and spread on a floor under the roof of a long shed, to

give a good opportunity for drying it, there were 213 bushels of corn in the ear; one basket of which was shelled, and produced half a bushel and two quarts of shelled corn; so that had the whole been shelled on the day of harvesting it, the produce would have been 119 bushels and 26-32 of a bushel of shelled corn; on the 14th of Nov. the whole was shelled, and measured, and found to be 116 bushels and 28-32 of clear sound corn; the average weight of which was 58 to 59 lbs. the bushel; the entire expense of cultivating this acre of corn, including \$35, charged for 40 cart loads of manure, was \$44."

That Payson Williams, Esq. of Fitchburg, is entitled to the society's premium of \$30, for having raised the greatest quantity of Spring Wheat, being 23 bushels and 28-32 of a bushel, on one acre. "In the spring of 1822, as early as the frost would permit, the ground was ploughed, and harrowed; the seed, two and a half bushels of the Gilman wheat, sown; again harrowed, and ploughed in fine, with a horse plough, and left in this situation with the belief that the crop would endure our New England drought better, as the surface would be enlarged, thereby retaining more of the dews than a plane surface; the result, compared with neighbouring fields, declares this belief not unfounded. As the field was seeded down with clover, herdsgrass, and red-top, this was also ploughed with the wheat; these plants not only stood the drought remarkably well, but at this time have completely covered the ground with the *Farmer's best carpet*. The quantity of grass-seed used by me, is never less than 12 lbs. of clover, and one peck of herdsgrass, to the acre. Here permit me to observe that innumerable are the instances in this country, where the farmer fails in his grass crops, by not allowing seed enough; and what is worse, the little he does give with such a sparing hand, is suffered to take its chance under that pest in agriculture called a bush harrow, which not only drags stones and other loose matter, into heaps, but

leaves the soil dead and heavy ; and does not cover the seed deep enough to strive with our July drought effectually. It may be asked how the scythe is to follow the plough ? to which I will answer, let the roller, an implement which every farmer would keep, did he consult his own interest merely, with a sufficient top or body to contain the larger stones, pass over the field lengthwise the furrow, in the dry part of the fall ; this process will not only crush in the small ones, but even the surface for the scythe, without the least injury to the grass roots ; to this digression I am impelled by no other motive. however much I may be mistaken, than the wish of advancing in some measure, the interests of my fellow citizens, whose good fortune it is to till the soil. I had the wheat cut very early, when much of the straw was green, which, after laying about two days, was in excellent order for the flail ; after which it was equal to swail hay for fodder ; the amount of grain by measurement was 26 bushels and 18-32, from one acre and 18 rods, the quality of the grain is excellent, not one kernel of smut or burnt grain in the crop ; the seed prepared by a thorough washing, after which it was immersed in thick white wash, made from good lime, so as to coat over every kernel, no fears need be entertained from the plentiful use of this liquor, as by way of experiment I have planted wheat after its lying in this liquor four days, which vegetated well." The committee are of opinion that the roller should be used immediately after the seed is ploughed in, in preference to the fall, as recommended by Mr. Williams. Said Payson Williams is also entitled to the premium of \$20, for having raised the greatest quantity of Potatoes, being 547 bushels, on one acre. " The land was twice ploughed, and furrowed three feet apart, and the manure, unfermented, made by sheep, and neat cattle, its quantity about 14 cords placed in hills two feet apart, hands immediately following the cart with hoes to finish the planting process, to prevent loss by evaporation ; planting finished May 21—the kind of seed

used, was the South American reds, 28 bushels to the acre, cut so as to allow two pieces to the hill; the weeding finished the 15th of June, the second and last hoeing the first of July, the vines beginning to bud, and were about eight inches in height; a few scattering weeds were occasionally pulled up, but no other disturbance was given to the vines till harvesting the crop, which was finished November the 3d; and by a careful measurement was found to be 547 bushels, the expense of cultivating the acre of wheat, including \$10 charged for the manure, was \$24. 71; that of cultivating the acre of potatoes, including \$14 for manure, \$54."

That Mr. David Little, of Newbury, is entitled to the society's premium of \$20, for having raised the greatest quantity of Mangel Wurtzel, being 970 bushels, and one half of a bushel, on one acre. "The situation of said acre is as follows—a swell inclining south-westerly, of a rich yellow loam, in 1821, it was planted with beets, manured with about three cords of compost manure, and produced about 530 bushels. May 9th, 1822, ploughed, harrowed and furrowed three feet apart; four and a half cords of compost manure were put in the furrows and covered with a plough; then a harrow was drawn lengthwise the ridge to smooth the land, the seed was then sowed one row on each ridge, with four pounds of seed, half the quantity would I think be sufficient; June 10th, commenced ploughing between the rows, and weeding, and thinning at different times till July 16th—the plants stood 10 or 12 inches apart in the rows, the work was done principally by boys, estimating two boys to be equal to one man. Oct. 31, Nov. 1st and 2d, they were harvested by men and boys, and produced 970 1-2 bushels of Mangel Wurtzel, besides 2 bushels of Carrots, and 109 Cabbages, three loads of the Mangel Wurtzel containing 137 bushels, were weighed at the town scales; the weight, according to the certificate annexed, was 3 tons, 2 c. 3 qs. 20 lbs. Six swine mostly fed with the thinnings from the beginning of weeding, until about the first of October; there are trees on

the said lot sufficient to produce 21 barrels of fruit; the entire expense of cultivating this acre of Mangel Wurtzel, including the cost of the manure and gathering the crop, was \$23 96 cents."

That Mr. Adams Knight, of Newbury, is entitled to the Society's premium of Twenty dollars, for having raised the greatest quantity of Onions, being six hundred and fifty-one bushels, on one acre. "The soil is a rich gravelly loam, with a gravel bottom; in 1821, it was cultivated with onions, and cabbages; and was manured with about five cords of barn manure, and produced a good crop; after the crop was off the ground, there were five cords of barn manure, and two and a half cords of leached ashes ploughed in—in April 1822, it was once ploughed, and sowed in rows 14 inches apart, which took between 3 and 4 pounds of seed; in the course of the season it was hoed between the rows and weeded four times; in September the onions were harvested, and there were 651 bushels, the entire expense of cultivating this acre of onions, including 21 dollars and 37 cents, the cost of manure, was 57 dollars and 38 cents."

That Messrs. Tristram and Henry Little, of Newbury, are entitled to the Society's premium of Twenty dollars, for having raised the greatest quantity of common Turnips, being 687 bushels and a half on one acre. "The soil is a clay loam and had been down to grass 6 or 7 years—in 1821, cut about one ton of hay; it was then ploughed as deep as the sward would turn over; 10 cords of compost manure, the principal part of the compost was marsh mud, spread and well harrowed; it was ploughed in ridges three feet apart; about one pound of seed was sown with a machine on the ridges; and a hand roller made to pass over them, which completed the sowing; when out of the way of the fly, they were thinned to the distance of one foot apart on the ridge—they were twice ploughed and harrowed; and harvested the last of October; the entire expense of cultivating this acre of turnips including 20 dollars for manure, was 35 dollars and 32 cents."

That Silas Little, Esq. of Newbury, is entitled to the Society's premium of Twenty dollars, for raising the greatest quantity of common Turnips, after another crop in the same season; having raised 615 bushels on one acre. "In the year 1821, something less than a quarter part of the acre was cultivated with Turnips, and about five common cart loads of compost manure, such as salt marsh pulverized, strong earth and sand was laid thereon; the produce was 30 bushels, the other three fourths had been laying to grass five or six years; and the present year we sowed Flax seed, where the turnips grew the last year; having spread on about the same quantity and quality of manure as before; we pulled the flax soon after the blossoms had fallen off, and there was a middling crop; the other part of the acre produced about 700 weight of hay, which was cut on the 26th of June; and the whole was ploughed and manured, the quantity put on the acre was 19 cart loads of 40 bushels each—the quality of this manure was similar to that above described, but more sand in order to make the compost better. when mixed with our dark clay loam, with a clay bottom; nearly two thirds of this manure was spread on one half the ground, and after harrowing, was put into small ridges, with a small double mould board plough, two feet and nine inches apart; the other part of the manure was shovelled into furrows made with the plough, the same distance; the plough then passed between the furrows, covered the manure, and although so great a portion of the manure was spread on half the land, yet the other half produced about as much; the quantity of seed used was one pound and a half; the time of sowing was from the first to the tenth of July; the flax was pulled the 4th, and that part of the ground sowed the last; the whole was sown with a machine made for the purpose, and but one row on a ridge; when the turnips were up, and out of the way of flies, they were thinned with a hand hoe and fingers, at the distance of ten or twelve inches, and afterwards twice hoed and twice ploughed, with the

small plough above mentioned ; the time of harvesting, from the 28th of October to the 1st of November, and there was found to be 615 bushels, well trimmed and fit for market, and about five or six bushels of large defective rotten ones ; we have weighed several bushels, and find a bushel will weigh 59 lbs.—the entire expense of cultivating this acre of turnips, including thirteen dollars for manure, was twenty-eight dollars and seventy-five cents.”

That Mr. Asa Rice, Jr. of Shrewsbury, is entitled to the Society's premium of Twenty dollars, for the account of the best mode of rearing, feeding, and fattening Neat Cattle. Said Rice is also entitled to the premium of Twenty dollars, for proving by experiments, to the satisfaction of the Trustees, the utility and comparative value of the Cobs of Indian Corn, when used with or without the grain itself, ground, or broken. A paper on the subject of raising Indian Corn, two successive seasons, with the aid of Plaister Paris, on a high hill on the farm of Mr. Rice, which from its difficulty of approach, had until two years since been neglected, was also exhibited. These communications are too lengthy to be inserted in this report, but your Committee recommend that said papers, together with three very interesting communications from William Hull, Esq. of Newton, on the best mode of raising Indian Corn, his mode of cultivating seven eighths of an acre, from which he procured 192 bushels of Corn in the ear, 4 bushels of dry Beans and several bushels of Turnips ; and on the culture of Carrots, and Ruta Baga, be copied into the Society's Journal for January next.

Claims for premiums were also exhibited to your Committee by the following persons, for raising the greatest quantity of Indian Corn on one acre of land ; to wit : Mr. Asa Rice, Jr. of Shrewsbury, raised 53 bushels ; Mr. Nathan Howe, Jr. also of Shrewsbury, 75 bushels ; Mr. Daniel Mears, of Lynn, 87½ bushels ; Messrs. Tristram and Henry Little, of Newbury, 116 bushels and 9 quarts ; Payson Williams, Esq. of Fitchburg, 116 bushels and 12 quarts ; and Mr. Daniel

Burnham, of Newburyport, 117 bushels and 8 quarts. Mr. Jacob Wilkins, of Marblehead, raised 57 bushels of Barley, on one acre and $\frac{1}{2}$ of an acre. "April 12, 1822, the land was ploughed about 8 inches deep, the soil loamy, inclining to gravel, descending to the North East from a ledgy knoll, which included a part of the premises; 13th, sowed three bushels of six rowed Barley, on what I considered the largest half of the piece—at the same time sowed one and a half bushels of two rowed Barley, on the remainder; sowed grass seed over the whole, and ploughed, and harrowed the same in. When the six rowed Barley was about six inches high, it was mowed down, and left on the ground; this was for experiment. July 18, mowed the six rowed Barley, and put it into the barn. 24th, mowed, and put into the barn, the two rowed Barley. The six rowed Barley appeared to be about 12 days forward of the two rowed in ripening; both were stacked separately in the barn; and each quality thrashed and kept separate. August 30th, the Barley being cleansed, was measured; the six rowed measured 34 bushels; and the two rowed measured 23 bushels—the straw we consider in value to be equal to the labor." No premium was offered for raising the greatest quantity of Barley; but your committee are induced to recommend that the Treasurer be authorized to pay said Jacob Wilkins, the sum of Twenty dollars.

For raising the greatest quantity of common Beets, Parsnips, Ruta Baga, Cabbages, and dry Peas; for introducing any Grass not before cultivated in this Commonwealth, and proving by actual experiment, and produce satisfactory evidence of its superiority in any one quality, to any now cultivated; for the most satisfactory evidence on "Soiling Cattle," not less than six in number, and through the whole season, together with a particular account of the food given, and how cultivated; for making the experiment of turning in green crops as a manure, on a tract not less than an acre, and prove its utili-

ty and cheapness, giving a particular account of the process and its results; for proving by actual experiment, the best season and mode of laying down land to grass, whether Spring, Summer or Fall seeding be preferable, and with or without grain or different soils; for raising the greatest quantity of Vegetables, Grain, Peas and Beans excepted, for winter consumption of the stock on his own farm, and not for sale, in proportion to the size of the farm and stock kept, having regard to the respective value of said Vegetables as food, stating the expense of raising the same, and the best mode of preserving the same through the winter; for taking up in one season, on his farm, the greatest quantity of good Honey, and shall at the same time, exhibit superior skill in the management of Bees; for giving proof of having produced the largest quantity of dressed Flax raised on one acre: no claims for premiums have been exhibited.

The Board will perceive by the papers accompanying this report, that of the seven claimants for the premium for raising the greatest quantity of Indian Corn on one acre, the quantity produced by four of the competitors was very nearly the same. Your Committee in awarding the premium to Colonel Valentine, were induced to decide in his favor as well from the quantity of sound corn, as from the weight of the grain; it will be seen that Mr. Burnham's Council Bluff Corn, weighed only fifty pounds; that of Col. Valentine, fifty eight to fifty nine pounds the bushel.

For the Committee,

THOMAS L. WINTHROP, *Chairman.*

Boston, Dec. 20, 1822.

THE Trustees of the Massachusetts Agricultural Society believe that they cannot render a more acceptable service to the cause of agriculture generally, than by publishing the letters, affidavits, and other evidence, furnished by the Candidates for their premiums, whether the persons who claimed them were or were not successful. The greatest benefit derived from offering

premiums is the exhibition of the various processes, which were pursued to enable the parties to become Competitors for them. Cattle shows and rewards for agricultural success would be of comparatively small value, if the *simple fact* of the successful experiment only should be announced. The public would be little benefited by the knowledge, that seven or eight persons had raised 100 bushels and upwards of Indian Corn to the acre, if they were un instructed as to the means, by which this crop in our cold, and unfriendly climate, had been produced. The fact, that such an increase had taken place, even in a few cases, would go far to shew the advantages of competition and the spirit which pervades the state, but still the great mass would be left to conjecture by what art, perhaps magical, such an effect had been produced. The following letters will shew, that the "magical" art is within the reach of every enterprising farmer, and that it consists simply in greater industry, and more skill which all may imitate, and probably with equal success.]

Hopkinton, November 15, 1822.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN,

THE following production of one acre of land cultivated with Indian Corn by the subscriber on his farm in Hopkinton in 1822, is offered for premium. The soil is a deep yellow loam; in 1821, the land was cultivated with Indian corn, and manured with ten cart loads of green barn manure, spread on the ground, and eight loads of compost manure, put in the hills. In the Spring of 1822, the ground was twice ploughed and twenty cart loads of green barn manure spread on it. It was then furrowed in rows about three feet and a half apart and about twenty cart loads of barn, hog and slaughter yard manure, were put in the rows, the last mentioned manure was mixed together with one hogshhead of Smithfield lime, the seed was the Brighton twelve rowed yellow corn, the kernels placed about eight inches apart each way. The corn was hoed three times, all the suckers were pulled out in July, and in August all the suckers were again taken away together with the false stalks and those that were smutty. On the first of September the stalks were topped and on the twenty-sixth the corn was harvested and spread on a floor under the roof of a long shed, to give a

good opportunity for drying it. There were two hundred and thirteen baskets of corn in the ear, one basket of which was shelled and produced half a bushel and two quarts of shelled corn, so that had the whole been shelled on the day of harvesting it, the produce would have been one hundred nineteen bushels three pecks and two quarts of shelled corn. On the fourteenth of November the whole was shelled, and measured and found to be one hundred and sixteen bushels and three and a half pecks of clean sound corn. Weight of the corn from 58 to 59 pounds a bushel.

EXPENCES.

Ploughing	-	-	-	-	-	-	2 50
Manure	-	-	-	-	-	-	25 00
Seed	-	-	-	-	-	-	50
Furrowing and planting	-	-	-	-	-	-	4 00
Hoeing	-	-	-	-	-	-	4 00
Suckering and topping	-	-	-	-	-	-	4 00
Harvesting	-	-	-	-	-	-	4 00
							<hr/>
							\$44, 00

The value of the suckers and stalks we consider equal to two tons of English hay.

Yours respectfully, JOSEPH VALENTINE.

This may certify that I have measured and staked off the above land cultivated with Indian Corn to the best of my skill and judgment and there is one acre and no more.

SULLIVAN SHEFFIELD, *Surveyor*.

This may certify that I was overseer and assisted in cultivating and harvesting the above stated acre of corn and the foregoing statement relative to the same is true according to the best of my knowledge and belief. DAVID JORDAN.

We the subscribers do hereby certify that we assisted in cultivating and harvesting the above stated acre of corn, and

we also measured the corn in the ear, and afterwards shelled it and measured it in the kernel and the foregoing statement relative to the measure thereof is true.

NATHANIEL NASON.
NEWELL POND.

I hereby certify that I have employed the persons above named to cultivate, survey, measure and harvest the above stated acre of corn as by their certificates above appears.

JOSEPH VALENTINE.

MIDDLESEX, SS.

November, 1822.

Then the above mentioned Joseph Valentine Esq. Sullivan Sheffield, David Jordan, Nathaniel Nason and Newell Pond, personally appeared, and made oath to the truth of the above certificates by them subscribed.

ELISHA FAIRBANKS, *Justice Peace.*

Newburyport, October, 1822.

This may certify that I have surveyed and marked off one acre of ground planted with Indian corn, in the Town of Newburyport nearly opposite the Court house—at the request of Mr. Daniel Burnham, the owner of the crop.

JOSEPH GERRISH, *Surveyor.*

ESSEX, SS.

November 15, 1822.

Personally appears Joseph Gerrish signer of the foregoing certificate and made oath before me that the same is true.

JACOB GERRISH, *Justice Peace.*

COMMONWEALTH OF MASSACHUSETTS.

ESSEX, SS.

November 18, 1822.

Personally appeared Daniel Burnham and Daniel Eaton and severally made oath that the annexed statement signed by Daniel Burnham of a crop of corn raised on the acre of land above specified is to the best of their knowledge and belief, true in all its parts.

Before me,

JACOB GERRISH, *Justice Peace.*

SIR,

On the 7th or 8th of October, I desired you by mail, to enter an acre of Indian Corn, for a premium, from the Massachusetts Agricultural Society—Mr. Tristram Little of Newbury, says that at Brighton, he desired you (in my behalf) to do the same, if you had not received my notice. I therefore conclude you have done it, and will proceed with my statement. The seed was raised at Council-Bluff on the River Missouri. It was received at that place, from the Maha Nation of Indians. The kernel is large, free from flint, and filled with a sweet white flour. It is generally eight rowed, though some of it is ten and twelve rows. It was brought to this quarter late in May 1821. I received a few kernels of it, and planted it, last of May or the first of June. Such was its promise, through the season, and such its bounty at harvest, that I thought it might become a valuable acquisition to this region. Accordingly the last Spring, I took a piece of land, such as is called common tillage ground, rather a light soil, inclining a little to gravel, and having a northern aspect. This is its character given by those, I have consulted, and who are considered good judges. The land had lain to Grass for the two years previous, without manure, but either from the failure of the Grass-seed or some other cause, the crops were quite scanty. The sward was so tender and broken, and the plough clogged so much, that it could not be turned so well as was wished. As soon as turned up, a harrowing succeeded, then the holeing, at the distance of four feet one way, and three the other. Five cords of common barn manure (about half new, and half old,) were put in the holes in a very coarse state. The greater part of the manure, I think ought to be called strong, some of it however was very feeble.—Three kernels were placed in a hill. Nine quarts of seed, were put on an acre and a quarter. It was my intention, that the planting should be done, as well as it could be, but from circumstances beyond my controul, I consider the whole process of planting, to have been badly

executed. The ploughing and planting, were done from the 4th to the 7th of May. Immediately after planting, the ground became so parched, with drought, that much of the seed failed. To supply the deficiency of standards, about the 25th of May, I placed seed in drills, from which when large enough, I transplanted into the field—say from 450 to 600 plants. As it is the opinion of many, that transplanted corn does not succeed well, perhaps it may not be thought amiss, if I observe, that from caring time to harvest, the transplanted could not be distinguished from the other. The corn was hoed four times, in the course of the season, without ploughing between the rows. The fourth time was merely loosening the surface of the ground, and destroying the weeds. The appearance of the corn was rather unpromising, until the rains had wet the manure. It then exhibited a very remarkable growth, and its luxuriance became so great, that it was apprehended by many, that the crop was much at hazard. I planted some of this seed, in the drill method, each standard was from fifteen to twenty inches asunder, and I believe (if I may regard this small experiment,) that if the field had been planted in this form, the crop would have been more abundant. This method would give sun and space to the shoots, from which much of the crop may be expected; but they were so crowded, by being in hills, that they could not have proper expansion—for this reason, I think this corn requires this method, much more than our common corn. The height of the stalks is not greater than much of the common corn, but above and below the ears, they are much larger. It was not uncommon, to see from three to five large shoots from a kernel, and on a shoot two good ears. The last season I suspected, that the best and most abundant crops might be obtained from the mixed-seed—this year, since harvest, I seem fully convinced that this will prove the fact—this is likewise the opinion of practical farmers, who have examined it, and bespoke some of the mixed-seed. I expect to plant the next season an-

other field, in which case I shall surely make use of mixed-seed and without apprehension, of its not coming to maturity—and shall plant in the drill method, leaving the standards, at least fifteen inches from each other. What I mean by mixed-seed is, when the kernel has become in a degree flinty, from receiving the *Pollen* or *Farina* from our flinty corn. My field became much mixed from the corn in the surrounding gardens—this I do not at all regret, for I am confident, that I had on the same space, a heavier crop than where I had pure-seed, on ground, much better, and much better prepared, than the field was—and this pure-seed was fully ripe, and was taken in the 24th October.

The fodder on the field, was abundant, it seems the sober estimate of the best judges, that on an acre and a quarter, from the tops and the bottoms, it was fully equal to two tons of English-hay. The time and labour in cutting and curing the fodder, was I believe three times as much as on common fields of the same size. The harvesting which was done by cutting up the bottoms, was about in the same proportion. The topping of the corn was done about the 20th of September. The harvesting, from the 18th to the 24th of October. In husking the corn, two qualities were made. Of the prime Corn there was $110\frac{1}{4}$ bushels, of the inferior, there was 7 bushels, making in whole $117\frac{1}{4}$ bushels. I am decidedly of opinion that had the field have been planted with any of our common-seed, under similar circumstances, that from fifty, to sixty bushels would have been the extent of the crop. On this question, I have consulted with those, who are considered, the most judicious farmers; who are acquainted with the land, and with the manner of its cultivation, this season, and but one of them, has given an idea of more than fifty bushels. It may seem very extraordinary to make so great a difference, between this, and that of our common-seed, but should I do otherwise, I should trespass on my judgment. Much of the labour in the cultivation, was done in broken time, and in connection with the other part

of the field, (half an acre, which was corn and potatoes.) so that I am prevented from that accuracy in the exact expence which I wish.—I dare not say that it was less than sixty-five dollars, and this is the sum at which I place it, including manure, land-rent and every other expence. The field was in the middle of the town, and as it was much exposed, was robbed of some of its best ears. It is thought, that it suffered a loss in this way of at least three bushels; but this loss can neither be ascertained, nor brought into the account. All I have hitherto said has been in favour of this corn. I will now revert to the other side. Although it came to maturity the last season, and has done the same this, and although I believe that most of our seasons will give it its full growth; yet I think from the pure seed in some seasons, the corn would be in danger of injury, as corn is commonly placed after husking, the reason for this opinion is, that I believe the cob to contain more moisture than that of any of our common corn. If I am here right, it reduces the value of the *pure seed* for common cultivation. As an experiment. I planted this year, on the 20th of June, pure seed in fifty or sixty hills, some of it on cold, and some on warm ground, it was taken in October 25th, it was well grown, and apparently ripe, and keeps well in trace, yet the cob was so full of moisture, that I am confident it would injure much, if placed as corn usually is. I am far from considering the mixed seed as liable to this objection. But if it could be made certain, that the pure seed would in all seasons, come to maturity, as fully as our common seed, yet I think the mixed, is to be preferred, for the heaviest crops, and from the mixed-seed, I believe much more may be expected from it, than from any corn we have among us. In saying this, I am aware, to whom I am addressing myself, and that I ought to be diffident; and to think that a more competent judge than I know myself to be, might give a different opinion. Another objection is its weight, I weighed some of it, as soon as

taken from the cob, and it was 48 pounds to the bushel; it was then thoroughly cured by kiln-drying and its weight was then exactly fifty pounds. Here perhaps, it is just to recollect its freeness from flint. After drying, it was ground into meal, and tried in various ways for bread, and the result was much in its favour. It requires of boiling water, to wet a pound, six and a half jills. At the same time, trial was made of some of our yellow meal, from the last year's corn, and it required four and a half jills to the pound. I have now to the extent of my observation, traced this experiment, from receiving the seed to its conversion into bread. If I have been minute and prolix, to tediousness, I must find my apology, in the responsibility I have felt, from presuming that no other field of corn, of this description, is offered to your notice. I am, Sir, with much respect, Your Humble Servant,

DANIEL BURNHAM.

Newburyport, 18th November, 1822.

Fitchburgh, Nov. 4th, 1822.

INDIAN CORN.

[To the Committee on Agricultural Experiments and Products.]

GENTLEMEN,

IN conformity to the rules and regulations of the Massachusetts Agricultural Society, I send you a statement of the amount, together with the manner of culture, &c. of one acre of corn, the growth of 1822.

The quality of the soil is a reddish loam somewhat stony, such as is usually denominated by farmers, warm chesnut land. good for grain. Its situation also may be considered friendly to that culture, as it has a southeastern aspect, shielded on the north by a wood.

In the summer of 1820, after taking off a small crop of hay, the ground was broke up for a crop of winter rye,

which on the following summer produced a middling crop ; immediately after this was harvested the stubble was ploughed in and permitted to ferment till late in Autumn, at which time I had about 12 cords of manure made by hogs, neat cattle, sheep, &c. spread as equal as possible immediately ploughing in the same across the stubble furrows.

As early as practicable in the spring of 1822, the ground was twice ploughed, harrowed and furrowed in the following manner, viz. striking back furrows with the horse plough so as to form ridges three and a half feet apart, between which were similar ridges, except their being the fair surface of the soil ; on these were planted the corn by making holes in a zigzag form six inches apart with a board with teeth affixed ; boys following dropping in and covering the corn with the hands.

The planting finished about the middle of May. The seed was soaked in brine for twenty-four hours and then rolled in plaster of Paris. The weeding finished the middle of June ; the second and last hoeing about the last of the same month. As this was well performed and when finished it was discovered, that some of the corn had began to spindle or tassel together with its having been beat down by a storm, compelled me relinquish the third hoeing as I consider it erroneous to disturb the roots after the tassel bursts forth. At the last hoeing we carefully suckered the corn, saving the same for fodder. The corn being of the large kind, many of the stalks grew to the height of ten feet. The stalks were cut very early, as soon as the tassel was dead, and after being well cured, had two loads, equal in value to one and a half tons English hay.

The corn was harvested the first of October, and after husking the same we found sixty-six and one half baskets of three bushels each of sound corn, and three bushels of soft corn. On shelling a number of baskets of the same measure and taking an average between the greatest and smallest yield (the variations from the two extremes but one pint)

and found the product one bushel and three fourths of a bushel on fifty-six quarts of perfectly clean sound corn which gives one hundred sixteen bushels and $\frac{12}{32}$ to the acre.

I attribute the success of this crop in a great measure to my having spread rather than put the manure in the hole as many fields in my immediate neighbourhood were almost destroyed by the drought and *worms*. some of them having half an acre cut entirely off, which had to be planted with potatoes. I need not mention that these fields were manured in the hills a method I fear but too much in use throughout the state. The soaking the seed in strong brine and rolling it in plaster was probably beneficial, as the ravages of the worms were only sufficient to make room for raising about one bushel of white beans.

By the annexed expence it will be seen that the cost to the cultivator (taking the whole of the manure to the charge of this crop and allowing for the top stalks, fifteen dollars) is a fraction less than *thirty-six cents per bushel*, nothing however is here allowed for interest on the worth of the soil, taxes, &c. these draw backs would not bring it over thirty-eight cents to the bushel. Your Humble Servant,

PAYSON WILLIAMS.

EXPENCES.

2 ploughings and harrowings,	-	-	-	\$3,00
12 cords manure at 12s.	-	-	-	24,00
Expence of planting with cost of seed,	-	-	-	3,00
2 hoeings with suckering, the grounds being rather stony 18 days work at 83 cents	-	-	-	12,00
Cutting and harvesting the stalks,	-	-	-	5,00
Harvesting, husking and cribbing,	-	-	-	6,00
				<hr/>
				\$53,06

I had almost forgotten *the shelling*, which however is usually performed evenings and stormy weather, say 4 cents per bushel, which the *cobs* in part will pay

\$57,71

Fitchburgh, September 12th, 1822.

This is to certify that I Philip F. Cowdin, being a sworn surveyor of the town of Fitchburgh, in the County of Worcester, have this day measured a piece of land for Payson Williams of said Fitchburgh, on which corn is now growing, and find it to contain one acre and no more.

P. F. COWDIN.

We the subscribers declare that we did this autumn help to harvest, husk, and measure a crop of Indian corn the product of one acre (as per certificate of P. F. Cowdin.) and found the same to be sixty-six and one half baskets of three bushels each and that on shelling a number of baskets (of the same measure) we took the average between their greatest and smallest yield (the variation but trifling) and found the product one bushel and three fourths of a bushel or fifty-six quarts of perfectly clean, sound corn: which gives a product from the acre, one hundred sixteen bushels and $\frac{12}{32}$. We would not be understood to testify that this is the precise amount of the crop, to one quart (as it is not only inconvenient but inexpedient to shell the whole crop) but that we feel satisfied that there is as *much*, as the above statement declares.

PAYSON WILLIAMS, *Owner.*

SOLOMON WILBER, *Assistant.*

Worcester, ss.

November 14th, 1822.

Personally appeared Payson Williams and Solomon Wilber and severally made oath, that the above declaration by them respectively subscribed, contains the truth, and nothing but the truth. Before me,

CALVIN WILLARD, *Justice Peace.*

CARROTS AND RUTA BAGA.

[To the Trustees of the Agricultural Society of Massachusetts.]

GENTLEMEN,

Newton, 28th Nov. 1222.

I sowed the present year, one acre of Carrots, on ground, one half of which was last year in carrots, and ruta бага,

the other half in potatoes, excepting a few rods, which was in grass. The parts of the acre which were in carrots, ruta бага, and potatoes, were highly manured the last year, and produced abundant crops. The few rods of mown grass was the last year, and adjoined the seven eighths of an acre, which I have described in my letter No. 1. It was ploughed at the same time and harrowed, and managed in every respect as the piece already described. After a very deep ploughing in April, fifteen cart bucks full of manure was spread on the ground, and immediately covered with the plough. About the middle of May it was harrowed and then ploughed, very deep in ridges, two feet apart. About the twentieth of May these ridges were thrown back into the furrows, and high ridges formed over the deep furrows, two feet apart. The seed was sowed in single rows, on the top of these ridges, between the 21st and 25th of May; about a pound to the acre. The seed not being of the best quality, and the season being unfavourable, in all the rows, it came up thin, and in many places, none at all. I expected but a very small crop. Early in June they were ploughed with a very small narrow plough, after ploughing they were weeded and hoed. They were so thin, that a great part of the work was done with a hoe. The field was ploughed, weeded and hoed, three times, and until the carrots had spread entirely over the ground, between the rows. The latter part of June, ruta бага, were set in all the vacant places on the rows, where the carrots had not come up. By the middle of July, the ground was entirely covered with the tops of the carrots and ruta бага. No weeds afterwards grew. The crop was gathered early in November, and the acre produced four hundred and thirty bushels of carrots, and two hundred and nineteen bushels of ruta бага, making six hundred and forty-nine bushels and an half of both.

I have made this communication, principally, to show the great importance of very deep ploughing, and thin sow-

ing. All the carrots in this field were very long and very large. They will find their way down as low as the ground is loosened, and there is this great advantage, when the root is so deep in the ground, the driest weather will not injure them. On another account, perhaps this communication may be useful.

Those on the grass ground, broken up in 1821, were the longest, and the crop was the greatest. On this ground, few or no weeds grew, and the labour of hoeing and weeding was much less, than on the other parts.

If the ground is broken up early in the Autumn, or in the summer, which is preferable, and well harrowed and cross ploughed the next spring, I have no doubt but it is the best mode of raising them. It is certainly all ended with much less labour in weeding.

I sold a part of the carrots, in heaps on the ground, for ten dollars a ton, and a part that I carted six miles, for thirteen dollars and fifty cents a ton. My waggon carried thirty-three hundred and a half, as appears by Mr. Newell's certificate.

EXPENCES OF CULTIVATION.

First ploughing in the Spring, one yoke of oxen, and a man, - - - - -	\$2 00
15 cart bucks of summer manure, from my barn yard, - - - - -	30 00
Ploughing to cover the manure, one yoke of oxen and one man, - - - - -	2 00
Harrowing once over the ground, - - - - -	75
Ploughing it in ridges, with a small horse plough, going four times in each ridge, - - - - -	3 00
Turning the furrows back into the ridges, and going four times in each, - - - - -	3 00
1 pound carrot seed, - - - - -	75
Sowing the seed by hand, 4 days work for a man, - - - - -	3 00
Amount carried forward	<hr/> \$44 50

Amount brought over	\$44 50
Ploughing 3 times, after the carrots came up,	2 50
Weeding and hoeing three times, - - -	15 00
Setting out the ruta бага plants, on the vacant parts of the ridges, where the carrots did not come up, being 4 days work, - - -	3 00
Gathering the crop, 8 days work, - - -	6 00
	<hr/>
	\$71 00

VALUE OF THE CROP.

10 tons of carrots, at \$10 a ton, - - -	\$100
5 tons of ruta бага at \$8 a ton, - - -	40
	<hr/>
	140
	71

Profits of one acre in carrots, and ruta бага, 69 00
 And no account is made of the tops. I am &c.

WM. HULL.

This may certify, that I assisted in sowing, cultivating, and harvesting the carrots, and ruta бага, on the acre here described. That I likewise assisted, in measuring the whole, and weighing a large quantity of them; and that the statement here given by Wm. Hull, Esq. is correct and true,

MATTHEW FARNHAM.

COMMONWEALTH OF MASSACHUSETTS.

November 30th, 1822.

Personally appeared William Hull, the owner, and Matthew Farnham, and made oath that the facts contained in the foregoing statement are true, before me,

TYLER BIGELOW, *Justice Peace.*

It is respectfully submitted to the judgment of the Trustees, whether this communication is entitled to any consideration.

WM. HULL.

Watertown, November 8th, 1822.

I have this day weighed one load of carrots, weight of the
 same, - - - 21 cwt. 3 qrs.
 Weighed also one other load, - - 12 cwt.

83 cwt. 3 qrs.

The above belonging to Gen. Wm. Hull.

JOHN TUCKER.

Deacon John Tucker, the signer of this is the sworn surveyor of hay at Watertown.

Newton, October 16th, 1822.

The subscriber hereby certifies that he has measured and marked off a piece of land for William Hull, Esq. of Newton on which a crop of carrots is now growing, which piece amounts to one acre and no more.

ELIJAH F. WOODWARD, *Surveyor.*

N. B. On the above named acre there are 84 young apple trees, of 5 or 6 feet height.

Also a considerable quantity of ruta бага interspersed among the carrots.

Middlesex, ss.

October 22d, 1822.

Then the above named Elijah F. Woodward made solemn oath to the truth of the above certificate by him signed, before me, EBENEZER CHENEY, *Justice of the Peace.*



INDIAN CORN—*No. I.*

[To the Trustees of the Massachusetts Agricultural Society.]

Newton, 27th Nov. 1822.

GENTLEMEN,

I HAVE planted, the present year, what I supposed to be a full acre of Indian Corn, on my farm in Newton. It has

lately been surveyed by Deacon Woodward, a sworn surveyor, and it appears there is only seven-eighths of an acre, or one hundred and forty rods. In 1821, the ground was mowed, and produced about one ton of English hay. No manure was put on the ground that year. It had been laid down to grass eight years. In October 1821, it was broke up, and remained in that situation, until the spring of 1822. The last of April, it was well harrowed with a sharp iron tooth harrow. After this, a composition of three loads of night manure, mixed with nine cart bucks of rich earth dug from the side of an old stone wall, and ten bucks of summer dung from the cow yard, was equally spread over this land, and immediately covered by the plough, ploughing across the furrows. Between the 6th and 12th of May, it was harrowed three times with the same harrow. By this ploughing and harrowing, the sods were sufficiently broken in pieces and pulverized, and the ground was in a proper state for planting. Furrows were then drawn north and south, three and an half feet apart. No ridges were formed. Hills were then made with the hoe, in these furrows, two feet apart, not flat, but descending to the south, with a small bank of earth on the north side of each hill. This banking on the north side of the hill was only done on a part of the field. From this mode of planting, I calculated two advantages; *one*, the sun would have a more direct operation on the hill; the *other*, the tender plants, when they first came out of the ground, would in some measure be guarded from the cold north winds. It was not my intention to have put any manure on the land, excepting what had been spread and covered and mixed with the earth, with the plough and harrow. My farmer, having been accustomed to dunging in the hole, was so desirous of putting in a small quantity, that I consented, and about a pint of fine rotten summer dung was put in each hill. The corn was planted between the 15th and 20th of May, with four kernels in each hill, equidistant, about five inches. During the

season, it was ploughed with an horse plough three times, and hoed as often.

The first time it was ploughed from the corn ; and in hoeing it, the furrows were filled up, and the ground level : the second time it was ploughed to the corn, and in hoeing the ground laid level as before.

The third time, two furrows were ploughed in the centre of the rows ; and, in hoeing, the furrows were filled up and the ground left nearly level. The first ploughing and hoeing was the 5th of June ; the second, the 20th ; and the third and last, the 5th July.

As the ground, by deep ploughing and hoeing, had been rendered loose, I was of the opinion, the hills of corn would receive more nourishment, and stand stronger, by the roots running under the ground, in the whole space, between the rows, than by drawing the rich earth around the hills with the hoe, as is the usual custom. Besides, the dews, the light rains, and the sun, have a much greater effect on the roots, when the ground is left in the manner I have here described, than when the earth is banked up around the hill. And further, when high hills are made, the roots running horizontally, will run out of the ground and perish.

Every thing which had been anticipated with respect to the manner, in which this field of corn had been planted and cultivated, was realized. While other corn in the same inclosure, and near it, was perishing during the dry season, not a leaf in this field even curled, and no part of it, in the least degree, suffered by the drought. The second week in October it was harvested, and from this seven-eighths of an acre, was measured one hundred and ninety-two bushels, of ears, after the husks were taken off, equal to ninety-six bushels of shelled corn. The whole was sound, and suitable to grind into meal, excepting three bushels of ears. As an experiment, on about one half of this piece, was planted between the hills in rows, an hill of field beans, at the time the corn first appeared out of the ground. This cost little or no

labour, except the planting. As they would be entirely shaded by the corn, I thought there was little expectation of a crop. They however came up very soon, grew on with the corn, while it was small, and before they were shaded, had taken such strong hold of the ground, that I supposed the prospect very promising. They were gathered about the 20th of September, and my farmer judged there would be about four bushels. I saw them myself, and was of the same opinion. By an accident, only one bushel was preserved. I did not perceive that the beans injured the corn in any degree. The accident to which I have referred, was, they were put on the barn floor in the evening to thresh, and by some means about twenty head of cattle got to them, and we could only clean up about one bushel. As a further experiment, at the last hoeing English turnips were sowed over the whole field. They were so shaded by the corn, that the crop almost entirely failed. There were a large quantity of small turnips, but not more than three or four bushels of a good size, and worth gathering. Some part of the corn had sixteen rows, some part fourteen, and some part twelve. As the corn ripened, the husks opened from the ears in the field.

The Trustees have offered "To the person, who shall raise the greatest quantity of Indian Corn on an acre of ground, not less than 70 bushels, a premium of \$30. If it should appear, that on the same quantity of land I have raised more corn than any other person, notwithstanding by admeasurement it falls a few rods short of an acre, I submit with cheerfulness to the judgment of the Trustees, whether by the spirit of the offer, and the liberal principles which govern the Society, I am not entitled to the premium. If I am not misinformed, there is a precedent in point, determined two years ago. If so, this settles the question.

As I before observed, it was my full intention to have planted an acre in the manner I have stated, and supposed there was that quantity until it was measured by the surveyor.

If the evidence accompanying this communication is satisfactory to the Trustees, that there was likewise raised on this same seven-eighths of an acre, four bushels of dry beans, I presume they will be considered as equal at least to eight bushels of Indian corn. I believe there can be no question, but one hundred bushels of corn may be more easily raised on an acre of ground, than fifty bushels of dry beans by any mode of culture. If eight bushels then is added to ninety six, it will amount to one hundred and four on seven-eighths of an acre. If, therefore, a full acre had been planted in the same manner, the produce would have been equal to one hundred and eighteen bushels and an half, one peck three quarts and a fraction over, calculating a bushel of dry beans equal to two bushels of corn.

Value of the Crop on this Seven-Eighths of an Acre.

96 bushels of corn at 90 cents a bushel	\$86 40
4 bushels of dry beans at \$1.80 a bushel	7 20
524 bundles of top stalks, weighing after cured, from 6 to 8 pounds, at 4 cents a bundle	20 96
Butts, or bottom stalks and husks,	8
	<hr/>
	\$122 56

Expenses of Cultivation.

Breaking up the ground in October 1821, one yoke of oxen, one horse, ploughman and no driver	\$2 75
Harrowing the ground in April 1822	75
Seed corn and seed beans,	75
3 loads of night manure,	12
9 cart bucks of rich earth to mix with night manure,	2
10 cart bucks of barn yard summer dung,	15
Cross ploughing the ground with a yoke of oxen and one man,	2
Harrowing three times,	1 50
Furrowing for planting,	75
One load of manure put in the hills,	2
	<hr/>
Amount carried forward.	\$39 50

Amount brought forward,	\$39 50
Planting, &c.	2 25
Ploughing and hoeing three times,	6
Cutting, binding, stacking, and carrying the top-stalks to the barn,	3
Gathering and husking the corn,	5
Gathering and putting the butts in the barn,	2
	<hr/>
	\$57 75
	<hr/>
Thus it appears that the value of the crop was	\$122 56
All the expenses,	57 75
	<hr/>

Neat profits of seven-eighths of an acre of Indian corn, \$65 51

I am with respect your most obedient servant,

WILLIAM HULL.

I, Matthew Farnham, have lived with William Hull the whole of this season, and have done and assisted in doing every part of the labour on the seven-eighths of an acre of corn, which is here described, that I assisted in a very careful manner in measuring the corn; and the whole statement here made with respect to the planting, cultivation and quantity, both of corn and fodder, is perfectly correct. Had it not been for the accident, which happened with respect to the dry beans, which I was perfectly knowing to, I have not the least doubt there would have been as many, or more than four bushels. I gave that as my opinion before they were destroyed.

MATTHEW FARNHAM.

Middlesex, ss. Nov. 30th, 1822. Personally appeared William Hull, Esq. and Matthew Farnham, and severally made oath that the foregoing statement and certificate by them respectively subscribed, and the facts therein contained are true. Before me,

TYLER BIGELOW, *Justice of the Peace.*

'The subscriber hereby certifies, that he has measured a piece of land containing 7-8ths of an acre belonging to William Hull, Esq. of Newton, on which he has this season raised a crop of corn. On this land there are 58 young apple-trees of five or six feet height ; also two large ones from fifteen to twenty feet in height, and one other at the border of said field.

ELIJAH F. WOODWARD, *Surveyor*.

Newton, 23d Nov. 1822.

Middlesex, ss. Nov. 25, 1822. Then the above named Elijah F. Woodward made solemn oath to the truth of the above certificate by him signed, before me,

EBEN. CHENEY, *Justice of the Peace.*

Newton, 27th Nov. 1822.

GENTLEMEN,

THE Trustees of the Society have offered a premium of \$30 to the person, who shall make the most satisfactory experiment, to ascertain the best mode of raising Indian Corn, in hills, in rows or in ridges, &c. In my communication, marked No. 1, I have described the manner in which I cultivated seven-eighths of an acre the present year, while I refer the Trustees to that communication for general information of the manner in which the corn was planted and cultivated, I shall here describe the manner in which another acre in the same inclosure was planted, and state the reasons, why I consider the mode adopted in planting the former piece preferable to the latter, and preferable indeed to any which has come to my knowledge. On the same field, that was planted the 7-8ths of an acre, separated only by about one an half acre of carrots, the nature of the soil being the same, I planted and cultivated an acre of corn in a different manner. There was this difference in the culture of the two pieces.

The last mentioned acre had been broken up two years. Last year a part of it was in carrots, and a part in potatoes. The year before, a part had been in Indian corn, and a part in potatoes. Both years it had been highly manured, and produced abundant crops. It was ploughed once in the spring and harrowed. About the middle of May, it was furrowed out for planting. The same quantity of manure was carried on it, as was carried on the seven-eighths of an acre, described in No. 1. A part of it was planted in hills, about four feet apart one way and about three the other—a part of it in rows, four feet apart.

The manure, instead of being spread on the ground, was put in the hills and rows. It was ploughed and hoed three times; and the last time of hoeing, it was hilled in the usual manner, and that in rows ridged, drawing the earth up to the corn.

This acre, the first part of the season, and indeed until it tasselled out, appeared more promising than the 7-8ths on the other side of the field. In the month of August, when the dry weather came on, there was a material change. The leaves of this acre curled, withered, and turned yellow, and appeared in a perishing state. At the same time the piece on the other side of the field, grew most luxuriantly. Its colour continued a deep green, and not a leaf in the field even curled; and it remained in this situation until the corn was hard. When the crop on this acre was gathered, it did not exceed forty bushels. There was very little difference between the two parts. From this experiment, and the comparative view here taken of the subject, it appears to amount almost to demonstration, that the mode adopted in planting and cultivating the seven-eighths of an acre, is much preferable to hills at a greater distance, and banked up in the usual manner, or in rows on ridges.

Besides the result of this experiment, there are other reasons founded in the nature of the thing in favour of the mode described in No. 1. In considering this subject, I should

presume the 'Trustees would think proper to take every thing into consideration, which could have a tendency to produce the greatest crop.

I shall therefore now state the reasons, why the mode described in No. 1, is preferable to any other which has been practised. And in the first place the result of this experiment is a very strong reason in its favour. By planting in this way, there will be about three times the number of hills, that there will be in planting in hills in the usual manner. In the next place, by spreading the manure equally on the ground, deep ploughing, and leaving the ground nearly level, the roots of the corn spread in every part of the earth, and not only have the strength of all the manure, but likewise of the whole of the soil. It is likewise preferable to planting in rows on ridges, because the ground can be lessened by hoeing around the hills, and the roots have a vacancy in every direction of spreading, without interfering. When the corn grows, there is room in every direction for it to spread, without one hill crowding on another. Besides, planting in hills in this way, the corn stands much firmer in the ground, and is not so liable to be broken down by heavy rains and winds. What may be considered a trifling circumstance, of the hills inclining to the south, with a small bank of earth on the north side, I thought had a very considerable effect.

Breaking up grass ground in the summer or autumn, and pulverizing the sods the next spring, in the manner represented in my first number, makes a better preparation for corn, than any other. The land has more strength, and will produce in proportion to its strength.

I examined a number of fields of corn in my neighbourhood, and it appeared that my hills had as many ears, and as large, as those planted at the usual distances. It consequently yielded both corn and fodder, in proportion to the number of hills.

I am with great respect your most obedient servant,

WILLIAM HULL.

This may certify, that I have carefully examined the foregoing statement, and as I did the principal part of the labour, it is within my own knowledge, that the facts it contains are true.

MATTHEW FARNHAM.

COMMONWEALTH OF MASSACHUSETTS.

Nov. 30, 1822.

Personally appeared William Hull, the signer of this statement, and Matthew Farnham, the signer of this certificate, and made oath that the facts contained in this statement are true. Before me,

TYLER BIGELOW, *Justice of the Peace.*

Shrewsbury, 20th November, 1822.

ON RAISING, FEEDING AND FATTENING CATTLE, ALSO ON THE UTILITY AND COMPARATIVE VALUE OF THE COBS OF INDIAN CORN WHEN USED WITH, OR WITHOUT THE GRAIN ITSELF GROUND OR BROKEN.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN,

IN the first place I select my earliest and best calves to raise, I let them suck the cow twelve weeks, which is my general rule, eight weeks twice a day and in sufficient quantity to keep them in a growing state, but am careful not to let them get fat. Four weeks longer, once a day, the two last however are allowed to take but about half the quantity of the two first; I keep a supply of good hay at their command all the while, as they will begin to eat when only a few days old, and then turn them out into good feed, without giving them any grain or meal. If I am raising a Bull, Cow or Ox, I would avoid giving them meal or grain; especially the first

or second years, as I would a pestilence. I begin with a creature so as rise upon the keeping.* In one instance, however, I have followed opposite plan, which tends to confirm me more in my belief. In April 1820, I had an uncommon heifer calf, which I set down for a premium calf, I knew very well, what I had got to do to obtain it, viz. to let it take what milk it would through the season and learn it to eat meal, which I did and presented it at the Worcester Fair, and obtained the first premium. I then tried to sell the calf, but could not; I considered it fit for nothing but the butcher's knife, and in fact not fit for that, it was neither veal nor beef. I then took it from the cow and put it to better than my usual keeping, but it lost its flesh and has appeared rather ordinary ever since, it appears to be crowded out of its natural shape. If I had reared the calf in my usual way I should have expected something extra from her but I now do not. To return to my mode of increasing their keeping, I give them a little better hay the first winter than the second. I make it my care and attention that my cattle do not lose in the winter what they gained in the summer which is too apt to be the case with some. I feed them as the weather varies, that is, in moderate weather they will not require so much, I endeavour to keep my barn tight and warm, I have witnessed with regret, farmers too often let their stocks of cattle remain out all day, through tempestuous stormy days in the winter, until they are chilled through, which must be very injurious, I take care that my cattle are sheltered from stormy days as much as possible. Fattening cattle is an employment which I like. I invariably aim to fat a creature as quick as I can. Every year since I commenced business for myself, which is fifteen, I have made one yoke of oxen good so as to command generally the

* We presume this means, so as to increase the quantity and quality of the food. E^d.

highest market price; with almost all those which I have fattened, I go through with all my spring work then turn them to pasture, in the fall I lay a foundation for giving them meal with green stalks small ears of corn and vegetables of some kind, I begin to give meal about the first of December and drive them to market the latter part of January, they generally weigh from 25 to 28 hundred the yoke, and from 300 to 330 pound of tallow. I would refer to Mr. Abijah White of Watertown, and Messrs. Davis, Miles and Pierce of Brighton who have generally purchased my beef. I give my cattle what meal they will bear; after I begin, they are allowed an average of three pecks per day for each yoke; by thus doing they will eat but little hay, I turn them out into the yard to lie during the night having a shed to go under at their pleasure which I consider far better than to remain in the barn. The kind of meal I have used for seven years past, almost exclusively for provender, is corn and cobs cracked and ground together, which is the best provender I have ever made use of for fattening cattle.* The reason I consider the cob useful, is, it swells in the creature and keeps him in good order; in no one instance since I have fed with this meal have my cattle been out of order by being cloyed or scouring, they are at all times regular, but when I formerly fed with clear Indian or oats and Indian, it was not unfrequent, that their bowels would get out of order, and I have had considerable difficulty in regulating them again, they lose two or three days, sometimes a week. When this kind of provender was first introduced in this vicinity it had its opposition like almost all new things, the second year, if I mistake not, which I made use of it, I thought I would try an experiment, as follows, by feeding one ox with corn and oats ground, the other with corn and cobs, having a yoke of oxen so even matched that no one who viewed the cattle appeared sat-

* We are by no means satisfied with the *reasons* assigned by Mr. Riee. The facts are what most concern us. Editor.

ished which was the best, accordingly I fed them as above. The cob is computed to make a little more than a third, therefore I mixed the other with one third oats which was my former mode, I gave each ox an equal quantity at a time except that the one that had the corn and oats, some days became dainty, and would not eat his allowance, while the other kept a regular course, the allowance for both was little rising three pecks per day. When I took the cattle to market Mr. A. White bought them, they weighed about 26 hundred and a half, the one fed on corn and oats had 162 pounds of tallow, and weighed about half a hundred more; the one fed on corn and cobs had 163 pounds of tallow and Mr. White pronounced his beef half a dollar on the hundred better than that of the other mostly on account of the *colour of the beef*.

In another instance I took a yoke of oxen, which had done all my work through the season up to the first of November 1818, on my farm which contains over one hundred acres. They were a good sort of cattle about a middling size, and no more than in good working order. I then put them to fattening upon the cob and corn meal; they were fed with nothing but hay, and the corn meal, I turned them in the month of February 1819. Mr. White purchased them, their weight was about twenty-four and a half hundred and had almost three hundred pounds of tallow. I have however fattened two creatures a little differently from what I have above described, one was a steer four years old the 10th day of February 1821, the first of March following I began to give him this cob and corn meal. He had not, previous to this, ever been fed with any kind of meal, grain or roots, of any kind whatever. I gave him from four to six quarts a day of this meal and nothing else but good feed until the 27th of September, which day I drove him to the Cattle Show at Worcester, and they awarded me the first premium on beef, I then drove him

to the Brighton Fair the same year and they awarded me one of the premiums there on beef; I sold him, his weight was 1509 pounds, had one hundred and fifty-four pounds of tallow. I have another steer four years old the 12th day of April last, which I have treated in the same way the past season, I drove him to Worcester, the 25th of September of this year. and the trustees awarded me the second premium on beef. It has been remarked by some well informed Agriculturalists in this vicinity, that it is not on record at any other Cattle Show in this state, that the highest premium for beef has been carried by four year old steers, since the Worcester Agricultural Society was formed. There have been four anniversaries, in which I have taken the premiums for the best fatted ox, for the second best do. for the best milch cow, for the best two years old steer, for the best heifer from one to three years old, and for the best heifer calf, *all* of my own raising, and wholly of the native breed except the heifer calf, which is a cross with DENTON. I have now three creatures preparing for the Brighton market, which I contemplate driving the first of January, viz. the above mentioned steer* will weigh between fifteen and sixteen hundred slaughtered, as he weighed two thousand alive in September last, and a cow that will probably weigh between eleven and twelve hundred slaughtered, and a three years old heifer nearly nine hundred, *all* of my own raising and fattening. Many of my friends are endeavouring to persuade me to keep the above steer another season for the Brighton Fair, at present I am undetermined. Before I close I would make a few more remarks on corn and cobs. My aged father who still survives, upwards of eighty years of age, who has formerly raised considerable excellent beef from this farm for the Boston market, since he has witnessed the saving of labour, and seen the effects in fattening cattle, and hogs, has often been heard to say if he had

* We conjecture Mr. Rice means the one which obtained the premium at Worcester.

known this thing when he first commenced business in the world, it would have saved him two or three hundred dollars. For my hogs, I mix oats with it, and it answers a good purpose, it gets them along as fast as any provender I ever made use of, I see no material difference. It makes excellent fodder for a horse and is coming very much in fashion for that use. My faith is so great in the thing I would carry my corn six miles to mill to be ground in this manner even if I could get it ground in the common way within half a mile. I submit these remarks for your disposal and consideration.

ASA RICE, JR,



Shrewsbury, Nov. 12, 1822.

ON RAISING CORN.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN,

THERE is a high barren hill on my farm, which has been improved for a pasture ever since the first settlement of the town, it had the appearance of making very good ploughing land, but in consequence of the steepness of the hill on every side, which rendered transportation so difficult, and supposing it bad husbandry to try to raise Indian corn without plenty of manure, one generation after another has passed off and suffered the hill to remain dormant. The present occupant being of the fourth generation of the same family in possession of the farm, hit upon an experiment of raising Indian corn with the aid of Plaster of Paris alone. I went on to the hill with my team in the month of September 1820, and ploughed as I supposed about two acres, and

found it an excellent soil, a deep and good coloured loam, free from stone, left it in that situation until the following spring, at which time I first gave it a harrowing, then cross ploughed and harrowed it again which left it in a fine state for planting. My neighbours began enquiring what I was about to do on the hill; I told them my plan; they said it was impossible, such a thing could not be done to any advantage, that I should lose all my labour but I was resolved to persevere in the experiment. I accordingly furrowed it in my usual way about a common pace asunder, dropped the seed, threw a common table spoonful of plaster into the hill, then covered it with earth which was all the manuring it had, except a slight quantity of ashes at the first time of hoeing. It pushed forward with greater rapidity through the season than my other corn where I manured very high, and at harvest time it appeared superior to any corn I had. Several of my neighbours kindly offered to assist me in harvesting and measuring the corn to know the result, we found by exact measurement there were ninety and a half bushels of shelled corn of an excellent quality, and by actual survey, we found there was one acre three quarters and twenty-seven rods of land, making almost forty-eight bushels to the acre; it was supposed to be the greatest quantity to the acre raised in the town, the last season, (it will be recollected the season for corn was not so good as the present.) The quantity of plaster it took, was about four hundred weight. The whole labour bestowed on the field exclusive of the harvesting was performed by one man and two small boys in fourteen days and one half. I presented this statement to the Worcester Agricultural Society, at their December meeting, and they awarded me a handsome premium and highly complemented me for my novel experiment. It was generally

NOTE. We have taken the needful liberty of curtailing Mr. Rice's letter. We hope without offence, and we are sure we have not lessened its perspicuity or usefulness. Editor.

supposed that the strength of the land was exhausted that it would not produce any thing farther unless it be very highly manured, which caused me to extend the experiment. I accordingly planted the same piece the present season, in the same manner, except adding a little more plaster, say, a quarter more to the hill. The same gentlemen who assisted me the last season in measuring the corn assisted me again, and we found by a careful and exact measurement there were one hundred and two bushels lacking two quarts, making over fifty-three bushels per acre. There are perhaps eight or ten acres on the top of the hill adjoining that I ploughed, which is so level, that it is very convenient working on it, which induces me the next season to sow this piece with oats and grass seed, with a good coat of plaster, and plough up another piece and manage it in the same way.

I now present the doings of both seasons to the Massachusetts Agricultural Society for their consideration.

ASA RICE, JR.

HENRY HOWE.

Marblehead, July 19, 1822.

JACOB WILKINS' CLAIM FOR BARLEY.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN,

THE year past the land was improved in raising vegetables of various sorts, manured and tilled in the usual way without any respect to an agricultural report.

April 12th, 1822, the land was ploughed about eight inches deep with a ploughman, driver, and four oxen; harrowed and carried off the rocks the same day.

The soil loamy, inclining to gravel, descending to the north east from a ledgy knoll, which included part of the premises.

April 13th, sowed three bushels of six rowed barley on what I considered the largest half of the piece, at the same time sowed one and a half bushels two rowed barley on the remainder.

Sowed grass-seed over the whole and ploughed and harrowed the same in.

There was no manure applied this year. When the six rowed barley was about six inches high, it was all mowed down, and left on the ground; this was for experiment.

July 18th, mowed the six rowed barley and put in the barn, 24th, mowed and put in the two rowed barley.

The six rowed barley appeared to be about twelve days forward of the two rowed in ripening, both were stacked separately in the barn and each quality thrashed and kept separate.

August 30th, the barley being cleansed was measured by myself, Henry Butman, and Jeremiah Hattaway. The six rowed measured thirty-four bushels, and the two rowed measured twenty-three bushels. The land was measured and contained one acre nineteen rods and one hundred and fifty-three feet.

The straw we consider in value to the labour.

JACOB WILKINS,
HENRY BUTMAN.

INDIAN CORN.

Newbury, Nov. 5, 1822.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN,

THE subscribers in support of a claim entered for the Society's premium for raising the greatest crop of Indian corn, offer the following statement of the situation, cultivation, and production of their lot. It is situated on the westerly side of Merrimack ridge, so called in said town; the soil is a dark clay loam. In 1821 was planted with beets and carrots, manured with six cord of manure, made by a brewer in Newburyport, and produced about 400 bushels to the acre. The first of May 1822, it was ploughed; the 9th, it was cross-ploughed; the 10th, it was planted in the following manner:—It was holed three and a half feet each way, and five cord of compost manure put in the holes. Four grains of corn were put in the holes on the manure, and covered with a hoe. The corn is the yellow eight rowed kind, and weighed, when harvested, 58 pounds to the bushel. The green or unripe corn was not measured. June 7th, it was hoed the first time; the 12th we thinned them to three plants in each hill, and filled up the vacant hills by transplanting; 14th, hoed it over the second time; the 25th, hoed it over the third time; July 15th, destroyed the few weeds that remained; the stalks were topped about the middle of September, harvested the 7th and 8th of October, and there were two hundred and thirty-two bushels of ears, and a fraction over; the fraction was shelled, which made nine quarts. By shelling four bushels of ears, the estimate was one hundred and sixteen bushels and nine quarts of sound shelled corn.

Respectfully yours,

TRISTRAM LITTLE.
HENRY LITTLE.

Essex, ss. Nov. 18th, 1822. Then Tristram Little and Henry Little made solemn oath to the truth of the above representation, before me,

EBEN. MARCH, *Justice of the Peace.*

The expense of cultivating the above crop of corn, including the rent of the land and the manure, and the labour at four shillings per day, is \$38,75. The stover from the same we value equal to one ton and a half of hay.

This may certify that I have measured the above field of corn to the best of my skill and judgment, and there is one acre and no more, including the land, without the corn which the roots of the plants occupy, twenty-one inches without the hills.

SILAS MOODY.

This may certify that we have assisted in gathering and measuring the above field of corn, and there was one hundred and sixteen bushels and nine quarts of sound corn.

PAUL JAQUES,

JOSEPH KNIGHT.

Essex, ss. Nov. 18, 1822. Then the above named Silas Moody, Paul Jaques, and Joseph Knight, made solemn oath to the truth of the above certificates, by them severally signed before me, EBEN. MARCH, *Justice of the Peace.*

P. S. We take the liberty to omit making a particular statement of the onion crop which was entered, as Mr. Knight's mode of culture is similar to ours. His statement you will have.

P. S. We take the liberty to state to you an experiment of planting about a quarter of an acre of the Mohaw, or Council Bluff corn so called. We think it a valuable plant for soiling or fattening cattle, as it is very luxuriant in its growth and inclines very much to suckers, and the kernel quite soft; but to cultivate for the grain we think it will not be valuable for in this season, which is two or three weeks earlier or longer than usual, this corn did not ripen; and another great objection is its weight; the ripest weighed only 45 pounds to the bushel.

Shrewsbury, November 20th, 1822.

[To the Trustees of the Massachusetts Agricultural Society.]

THE following is a correct statement of a small piece of Indian Corn raised by me, the subscriber, the last season, on one acre and twenty-five rods of land, it being where I raised a crop of spring rye in 1821. I turned in the stubble the first week in May last, in about ten days after I cross ploughed it, furrowed it out and planted it as quick as I conveniently could. I then dressed it three times in the common way, I put twenty cart bucks of manure, ten made the last winter, green from the barn, spread and ploughed in, the other ten made the season before and put in the hill, when the tassel was beginning to curl I cut the stalk from the corn, I then let it stand in the field until about three weeks since, I collected it together, and husked it out, and measured it as accurately as I possibly could, in a two bushel basket, and found it to produce seventy-four baskets, and nearly a half; we have since shelled one basket and found it to produce one bushel and five quarts to the basket, the odd measure producing seventeen quarts; making a total of eighty-six bushels and three quarts; all which is submitted for the consideration of the Massachusetts Agricultural Society, by their friend and well wisher,

NATHAN HOWE.

N. B. The above described land had no manure in 1821, and had been used for mowing eight or nine years.

N. B. I took no more pains to raise the above stated crop of corn than I commonly do one year with another, nor is the crop much different from what I commonly raise when the season is good and the land in order, nor had I ever once thought of reporting the same to any society whatever, until I came to collect it together, which was then concluded on by the advice of my neighbours.

Worcester, ss.

Nov. 26th, 1822.

Then the above named Nathan Howe made solemn oath to the truth of the above statement.

Amasa Howe also made solemn oath that he assisted in measuring the above stated crop of corn and that the above statement is correct. Before me,

JONAH HOWE, *Justice of the Peace.*

Nov. 25th, 1822.

This certifies that the field from which Nathan Howe, Esq. raised eighty-six bushels and three quarts of corn, this season, contains one acre and twenty five rods from actual survey.

J. H. MILES, *Surveyor.*

Bellingham, Sept. 28th, 1822.

ON INDIAN CORN.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN,

THE following is a statement of the production of one acre and one quarter and twenty-three rods of old plain land, the soil of which is a sandy loam, cultivated with Indian corn, by the subscriber in Bellingham; said land had been laid down and mowed six years.

In the month of August 1820, about one third of the land was ploughed: in the Spring of 1821, the remainder was ploughed and planted with Indian corn in hills, with one common shovel full of manure in a hill, which produced a handsome crop of corn. In the Spring of 1822, ploughed the ground twice with a small plough; furrowed the ground shallow at the distance of between six and seven feet one way, filling (or nearly so) those furrows with manure; cov-

ering up said manure by two furrows one on each side; planting the seed corn in those two latter furrows at the distance of from eight to ten inches per grain asunder: ploughing and hocking said corn, twice all one way, and hoeing part of it the third time.

The 16th of September, the corn was harvested and measured, and there were one hundred and fifty-five baskets full of ears; and one basket full of ears was shelled and made thirty-one quarts, making in the whole one hundred and fifty bushels and five quarts; and there were four wagon loads of pumpkins on said ground. The seed was the eight rowed white corn. JOHN C. SCAMMELL.

SPRING WHEAT.

The following is an Appendix to the Report of Thomas L. Winthrop, Esq.

William Jackson, Esq. of Plymouth, raised thirty-four bushels and twelve quarts of Spring Wheat, on one acre, and forty-two rods, being at the rate of twenty-seven bushels and seven quarts to the acre; and the premium would have been awarded to him, had not the committee been under some mistake as to the quantity of land cultivated; the evidence required being satisfactory to the committee, they recommend that the premium of thirty dollars be paid to said Jackson.

January 11th, 1823.

Plymouth, 7th Oct. 1822.

[To the Committee on Agricultural Experiments and Products.]

GENTLEMEN,

THE following is the statement of the cultivation and produce of one acre and forty-two rods of land, cultivated by me, in the years 1820, 1821, and 1822. Previous to the year 1820, this land had been improved for mowing and pas-

ture for more than thirty years. In the summer of 1819, (a season of great drought,) the sward was entirely destroyed by worms, which made it necessary that it should be cultivated, or it would be unproductive for some years. In the Spring of 1820, I had it ploughed, and planted with Indian Corn; manured in the holes with twelve waggon loads of stable manure; the crop was sixty-three bushels. About the middle of August, hoed in winter rye; the crop in 1821, was thirty bushels.

Immediately after reaping the rye, I had the weeds and stubble ploughed in. The Spring of 1822, I put on twenty waggon loads of stable manure, had it spread and ploughed in the 18th of March; the 21st harrowed with an iron tooth harrow, sowed two bushels and one peck of the Gilman wheat; 20 pounds of clover seed, and a half bushel of red top seed; harrowed again with the same harrow, and then with a bush harrow; the wheat being first soaked 48 hours in fair water, and well limed, by mixing with three pecks of slacked lime. The 19th July finished reaping and it was thrashed the next week. The 2d of August it was winnowed and measured up thirty-four bushels and twelve quarts.

WM. JACKSON.

ON HEIFERS, SWINE, &c.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN,

I HAVE presented for premium five spayed Sows perfectly healed and in good condition, and conformably to the rule prescribed to entitle an applicant to the premium, I beg leave to state the process in manner following, viz. :—The animal is laid on its side and held fast by one person unless over forty pounds weight; exceeding that weight two persons may be necessary. An incision is then made from three

to six inches long, proportioned to the size of the subject, through the integuments and abdominal muscles to the peritoneum,* in a transverse direction from the spine toward the linea alba,† at the distance of about one inch from the last short rib of one side, (the opening nearly corresponding with the direction of the rib,) the peritoneum is then to be cautiously opened to prevent wounding the intestines. The intestines are next to be turned out with the hand, which exposes the ovaria, (which are two oval bodies on each side of the uterus, about the size of a walnut in a pig of sixty or seventy pounds weight) consisting of a number of small vesicles called ova; these are removed by the knife, the intestines replaced, and the external wound sewed up, the pig may then be returned to the sty and fed sparingly for a few days. In addition to the pigs now exhibited, this operation has been performed on twenty sows of various sizes at Byfield, in the county of Essex, and at Brighton by direction of Mr. Parsons, who authorizes me to state to you, gentlemen, that he is perfectly satisfied with my ability to perform this operation successfully.

With great respect your obedient servant,

JOHN BAKER.

* *Peritoncum*, commonly called film of the belly.

† *Linea alba*, is a straight line drawn from the point of the breast bone, directly between the legs.

ON GRASSES.

[To the Recording Secretary.]

DEAR SIR,

At your suggestion, that there might be some utility in publishing the result of some experiments made the past season upon the evaporation of certain Grasses, &c. in the process of drying or making for safe and useful preservation;

I herein inclose the same to you for such disposition as you may think proper.

The great object of research seems to be, what is that admirable process of nature, (as yet too little understood,) by which vegetable life is sustained and promoted? And how can this be traced or pursued so as to allow to human skill and ingenuity the nearest approach to the wonderful perfection of the great design? That this may be usefully done—that it is indeed partly accomplished, and that we are in full progression to this effect, cannot be doubted. The discoveries and improvements in those sciences, particularly in Europe, which have a reference to the theory of agriculture, have of late shed such a light upon the subject, and these have been so followed up by practice and confirmed by experience, that the result is indeed most auspicious, and marks the present age as an era of improvement.

But the process of nature is indeed subtle and mysterious, and can only be unfolded to the most earnest and diligent inquirer.

An accurate knowledge of the elements which compose vegetable life, and the different degrees in which they prevail in its formation, cannot be useless, in looking back for its origin and first principles. The tendency of most modern discoveries in relation to vegetation has been to shew the great prevalence of water in its composition. This has not only been made to appear by the analysis of plants, but it has to the astonishment of those who prosecuted these researches, appeared, that an acre of ground gave, according to its humidity, from 2 to 4000 gallons of water to the atmosphere in a day by evaporation only. The operation of this element has appeared so extensive, that it has led to the most delicate experiments, and induced some even to suppose it the sole source of vegetation.

A curious instance has been frequently published, of

a willow inserted in a leaden vessel with a given quantity of earth, and supplied constantly with water; the willow thrived and acquired great growth and weight in a few years;—whilst on a subsequent examination of the soil, it appeared no sensible diminution had taken place.

It is observed by an ingenious writer,* to whom agricultural science is much indebted, “That although the mode in which manures operate on soils is not so obvious to the senses as to be fully understood, there are three ways in which water promotes their improvement. It preserves a favourable degree of temperature; feeds by conveying nourishing substances; and so as a pure element, it is beneficial. To prove that water enters largely into the composition of vegetables, and is thus advantageous, the same writer observes: “That plants cut green, and afterwards dried, lose by exsiccation 66 to 70 parts out of 100.”

The loss of weight by drying will be found in this country to vary very essentially from what takes place in Scotland, especially as it respects different plants. But our hay is of necessity made lighter by the heat of our summer, as well as for the purpose of its being stowed in large bodies and tight barns.

It should be premised, that the time of cutting the several grasses, &c. in the following statement was the same as is usually practised by husbandmen in our State.

Of 100 lbs. of vegetables cured in 1822, the product was as follows, viz.

100 lbs. of Green white clover, gave of hay	17½ lbs.
100 „ of Red do. gave	27½ „
100 „ of Herds' Grass, gave	40 „
100 „ of Fresh Meadow, gave	38 „
100 „ of Salt Grass, gave	39 „
100 „ of Mixed, 2d crop on English Rowan, gave	18¾ „
100 „ of Corn Stalks, gave	25 „
100 „ of do. cut in milk with the ear,	25

* *Sir John Sinclair.*

It is to be observed, that the weight will vary from ripeness, and many other causes, such as wetness of season, shade, thickness of growth, &c.

I am, Sir, with much respect, yours,

JOHN WELLES.

Dorchester, Oct. 1822.

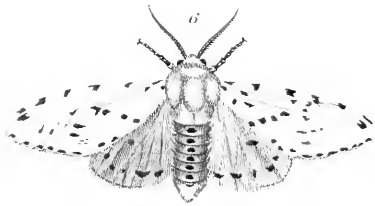
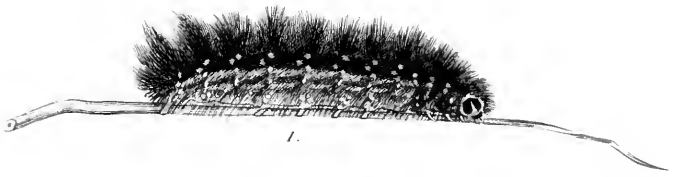
NOTICE.

WE think it our duty to acknowledge the receipt of a very interesting article from Dr. T. W. Harris of Dorchester upon the natural history of an insect, which has for many years made great havock in our salt marshes. We will not anticipate the public opinion by expressing our own opinion in its favour—we can only say, that we regret that the diffidence of the writer induced him to withhold it, till the last sheet of the present number had been put to press. In behalf of our colleagues, we tender to him the thanks of the Trustees, and we regret that we shall be obliged to delay the publication of it, till our next number. The description is very clear and satisfactory; and the drawings are so beautiful and so exquisitely finished, that we should have supposed, if they had not been announced as the work of another hand, that they proceeded from the pencil of the lamented Peck.

J. LOWELL, *Cor. Sec. of the M. S.
for Promoting Agriculture.*

January 24, 1823.

N. B. We anticipate the pleasure of announcing to the public in our next number, the publication of the Lectures of Professor PECK. We trust that the respect due to his memory, and a wish to promote the reputation of our country, and to encourage the efforts of our scholars and men of science, will induce all who can afford it to patronize this work.



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[No. IV.]

EDITORIAL REMARKS, BY JOHN LOWELL, ONE OF THE
EDITORS.

*The History of the Massachusetts Agricultural Society—
The recent attacks upon its management—General views
on this subject.*

ONE of the editors, is induced to avow his agency in these remarks, because he would not commit his colleagues, and because he entertains no sentiments on this, or any other subject, which he feels the smallest desire to conceal. The Massachusetts Agricultural Society has been charged with inefficiency, it has been accused of arrogating to itself merits which belong exclusively to the Society in Berkshire, it has been attacked from another quarter for adopting bad regulations as to its premiums at the annual Cattle Show, and by both classes of fault-finders, it has been stigmatized as a set of "*Gentlemen Farmers*" publishing unfair accounts of experiments, or making manure, and breeding cattle in their libraries—all these sarcasms fall pointless—they do not excite a feeling of irritation but of regret, that in a cause, in which of all others, one might hope strife could never enter, a generous noble cause, of advancing the best interests of our common country, such feelings should be indulged and avowed. The Massachusetts Agricultural Society, its members and its trustees, have never claimed any exclusive or peculiar merit. They have endeavoured to pro-

mote the interests of agriculture which they believed *one* of the most and indeed *the most* important branch of human industry. Its annual products compared with all others, are at least as fifty to one. It was in a wretched state in 1792 when this society was incorporated, perhaps *never* lower. On recurring to the list of original members it will be found to embrace persons in all parts of Massachusetts and Maine, at least seven eighths of whom were chosen from *agricultural* counties. It will be found also to embrace a large number of the most venerable and honourable names then in Massachusetts. I need only mention John Adams, James Bowdoin, Samuel Adams, Fisher Ames, George Cabot, John Brooks, Francis Dana, Rev. Dr. Dean, the author of the *New-England Farmer*, Lieut. Governor Cushing, Dr. Cutler the Botanist, Dr. Dexter, Hon. Samuel Dexter, his son Samuel Dexter, jr. Justin Ely, Dwight Foster, Hon. Elbridge Gerry late Governor, and Hon. Nathaniel Gorham former President of Congress, Christopher Gore, William Heath, John Hancock, the very popular patriot and Governor, General Lincoln, Levi Lincoln, late Lieut Governor, Hon. George Leonard, Theodore Lyman, Jonathan Mason, Samuel Phillips formerly President of the Senate, and Lieut. Governor, Hon. Timothy Pickering, Hon. Thomas Russell, first President of the Society, and greatest benefactor, Hon. James Sullivan, late Governor of the State, David Sears, Hon. Increase Sumner, late Governor of this State, Judge Sedgwick, Judge Sewall, General Shepherd, Thompson I. Skinner, Judge Simeon Strong, Hon. Cotton Tufts, Israel Thorndike, Henry Van Schaack of Pittsfield, Hon. Joseph B. Varnum, Hon. James Warren, of Plymouth, and a much greater number. Need I say, that the founders of this extensive Society entertained liberal views, that it embraced without distinction of parties, a large, I might almost say an infinitely great proportion of all that Massachusetts then possessed of talent, intelligence, influence and virtue? Has this Society in any *one instance* departed

from its original purity and principle? Has it suffered that worst of all scourges, *party spirit*, to enter, *even for a moment*, its threshold? We defy any man, (for it has no enemies, and therefore we shall not confine the challenge to them,) we defy any man to point out a case in which it has permitted this deplorable feeling to enter into its measures. Singly devoted to the interests of agriculture, it has viewed with delight the confidence of all parties in its integrity and impartiality. We need not say that its published communications have been as frequently from one party as from another. The only remaining question is whether they have fairly fulfilled the public expectations. In the first place it may be remarked, that they made a most liberal subscription to a common fund, which now amounts to thirteen hundred dollars a year. It will be found that this whole fund was principally raised by donations from *opulent* men. Mr. Russell being the largest contributor, Mr. Gore the second, and Mr. Bowdoin the third. The fund has been increased to its present amount by the care, intelligence and zeal of the Treasurers of the Society, by the disinterested conduct of the trustees who have never expended one cent for their own advantage or entertainment, but have husbanded the funds as if they were their own. Now we confidently appeal to our liberal friends, and associates in the common cause in the distant counties, whether the opulent part of the Society should be reproached for their efforts which treasured up a fund to be employed whenever the state of intelligence in the country, and the progress of society should demand it? If it be asked whether the society did much in its infancy, we answer readily and frankly, no. But with still more confidence we add that it was not their fault. The institution was ahead of the age and of the intelligence of the state, and of public spirit. Its two first volumes will shew that the trustees were not remiss. Their queries distributed all over the state prove their zeal, their intelligence, their intimate knowledge of

the real wants of agriculture. No society in Europe or America ever issued a more valuable set of queries, and no society could at this day improve them except by some trifling additions derived from new discoveries. But neither Europe nor America were prepared at that time for the improvements and experiments which have since taken place. It is praise enough that, the Massachusetts Agricultural Society was the third in order of time, framed, established, and endowed to promote the cause of Agriculture, (as we believe) in any part of the world and that it never lost sight of its object, and was always ready to encourage, and reward all attempts to improve any one branch of agriculture and to give publicity to any ingenious suggestions for the promotion of this art. Is there any solid reason for encouraging a distinction between *practical* and *theoretical* farmers? Or if it pleases our witty friends, *gentlemen* farmers? The last expression, however, in such a country as ours, is invidious; it tends to excite prejudices. It looks, as if the theoretical farmers claimed to be *above* the practical ones. It leads to distrust, and to the propagation of prejudices against the truth. We shall consider this question more fully. A southern planter, like WASHINGTON, or Jefferson, or Madison, or Taylor of Caroline, the famous author of *Arator*, has no other dependence, we will suppose, and it is generally the case, but his land and his labourers. He never touches the plough personally, but upon its products, his fortune depends. He is educated as a farmer, he has no other employment, unless when called into public service. Can it be pretended, that as he directs all the operations of his own farm, changes them according to his experience, and his constantly increasing information from books and practice, that he is not as good a judge of practical farming, as a New-England farmer who conducts his own plough? Have these southern planters who never personally labour, shewn any defect of skill? Have they not varied their cultivation, introduced not only new modes of culture, but new plants

which have doubled the productions of the United States? In my early days, rice and indigo were almost the exclusive productions of South Carolina. We have seen the culture of cotton substituted, and exports to the amount of forty millions of dollars take the place of articles which did not yield perhaps ten millions. Would merely practical labouring farmers have been so likely to make these speculative changes? We think not. Let us proceed to New England. What natural obstacles should prevent President Adams, or Col. Pickering, or Mr. Gore, or Mr. Lyman, or Mr. Quincy, or Mr. Brooks, or Mr. Parsons, or the late Lieut. Governor Lincoln, or his son, from comprehending the principles of agriculture, or carefully and accurately weighing the facts which resulted from their experiments? I will grant, that as they may not *personally* labour, and may not as carefully superintend their labourers, they may not make as great profits as those who do, but they are as capable of keeping exact accounts of the comparative profits of one crop or another, to say the least. They can test as well as the best *practical* farmer the advantages of one mode of cultivation when compared with another. They can perceive the effects of different manures and of different crops. They can tell whether their cattle are or are not most economically supplied by pasturage or soiling. They can decide whether by cultivating corn only, or carrots, potatoes, Swedish turnips, and mangel wurtzel, they can have a greater surplus of hay, and support more stock. All these points, the theoretical farmer can decide as well as the others unless it be assumed that they are incapable of computing the lowest sums in arithmetic. But we do not mean to rest this question on this ground only. We assert, and mean to prove, that almost all the improvements of the agricultural art were the effects of the skill and industry of theoretical farmers, and that even the most familiar implements of husbandry now in so common use that our farmers believe that they always existed in their pre-

sent state have been improved by the effects of theoretical men. The plough of the Antient Romans was a machine as different from ours as possible and would excite the ridicule of the most ignorant farmer. Even the French farmers at this day have a most unwieldy plough, and their oxen draw this rude implement by their horns only. They have not yet learned the value of our rake. Their hoes are most clumsy and inconvenient. Within three years a light hoe with four steeled prongs has been introduced with us for digging potatoes, which is decidedly superior to the common one. Ploughs have undergone great changes and improvements chiefly by the inventions of theoretical men. The addition of the regulating wheel to the breaking up plough is found to be of great value. The progress of all these discoveries is slow, and nothing contributes to retard it, so much, as these occasional sneers at Theoretical Farmers. Gentlemen Farmers (if this term so unkind suits our friends better) are the Pioneers in agriculture in the same manner as mechanics in their workshops have been the pioneers in manufactures, and it would be as absurd to laugh at the barber, who introduced the Spinning Jenny in Great Britain which gave the first impulse to cotton manufactures, or at the American artist who invented the cotton gin, or at Fulton who first applied successfully the steam engine to navigation, on the ground, that the two first were not practical manufacturers and the last not a practical navigator, as to contend, that President Jefferson's hill side plough was of no value, because he never turned over a furrow in his life.

Who was Olivier de Serres the father of French Agriculture, or Evelyn the venerated author of the English Sylva, but *theoretical* farmers? Who was Duhamel the author of the best treatise on Fruits, and who contributed more than any other man to the present state of perfection of orchards, and of the finer fruits, but a theoretical man? Who has done the most in the present age to enlarge our knowledge

of this branch of agriculture and horticulture? Thomas Andrew Knight, of Down'ron Castle, near Ludlow, who has added more new varieties to our fruits than any man living. We shall shew in the course of the present number that his zeal for the promotion of horticulture has been liberally extended to this country.

But it has been intimated that this central society had arrogated to itself merits, to which it was not entitled; that it had been tardy to do justice to the great and meritorious exertions of the Berkshire Society. This is unkind; we have always been prompt to acknowledge the early, efficient and intelligent efforts of that society. We have admitted that they were the first to give a spring to agricultural efforts by introducing the British and French system of public shows of cattle and manufactures. Still too much must not be claimed on this score. It was not an original thought. Many of us had visited the European shows, and the subject of introducing them had been discussed, and there can be no doubt, that long ere this, they would have been in full operation from the successful effect of European example. This is not said with a wish to diminish the merit of Mr. Watson, Mr. Gold, Mr. Melville, and Mr. Mackay, and the "other Gentlemen" Farmers of Berkshire. We know and acknowledge that they have done every thing in their power to promote an enlightened and improved course of agriculture, and surely they may be contented with this merit, without wishing to deprive other societies of their humble share in this common cause.

We most earnestly hope never again to see any invidious comparisons. It is much more easy to find fault, than it is to discover and propagate useful improvements. *We are all novices*, much more behind the state of cultivation in the smallest state of Europe than our pride will admit. Either of the small Italian states, at least on the plains of Lombardy, or any district of the Netherlands could teach our best farmer that he knew but little of this important

art. Let us all then be modest in our conscious ignorance and defects.

We have a few remarks to make as to the matter and manner of this journal. No men can be more sensible than we are of its imperfections. How can it be more respectable, when the whole state is so deficient in agricultural knowledge? Till within a few years, there were no books to inform us what were the modern improvements in more thickly settled and cultivated countries. Our whole library is still extremely meagre. Yet we are reproached with introducing articles which are above the capacity of common farmers. If it be intended as an intimation that we devote too large a proportion of this work to philosophical agriculture, we deny the fact; we always give the preference to homebred, practical essays and experiments. But we are not ready to admit that the introduction of rational and scientific speculations, such as those of Kirwan and Davy is inexpedient. Massachusetts has scarcely a town which does not furnish educated men. Knowledge must be first communicated to them, and from them it will inevitably reach their less informed neighbours. We have devoted many pages to horticulture, to the best mode of raising vegetables and fruits for the table, and if we wish to rise one grade above mere subsistence, we must continue so to do. We shall devote a considerable portion of our journal to horticulture, orchards, and fruits. Massachusetts has fourteen large towns containing a population of one hundred thousand souls. When men are thus collected in great masses they will require the innocent luxuries of the table, and there are none more so than vegetables and fruits. To supply this population of one hundred thousand souls, fifty thousand at least must be employed. Thus nearly one third of the state are interested in acquiring horticultural information, in being taught to manage their gardens. Would you always continue in your present state of ignorance on these subjects? Shall it be said that from

June to September in our scorching summers, a traveller may traverse Massachusetts from Boston to Albany, and not be able to procure a plate of fruit, except wild strawberries, blackberries, and whortleberries, unless from the hospitality of private gentlemen? It is painful to reflect, that every cottager in Flanders, Germany, Holland, and England, is better supplied with summer fruits than our most opulent farmers.

This almost utter neglect of cultivating summer and winter fruits, materially injures the health of our farmers. How mortifying to see the finest climate for the cultivation of the apple, so undervalued, that many of our farmers are obliged to slice up their summer fruit, and suspend it in the front of their houses to dry, in order that they may have a comparatively insipid and tasteless provision for winter! Yet such is too often, I may say too generally, the case.

The greatest benefit, however, which our farmers would derive from an attention to gardening, would be the acquisition of habits of care and neatness, which would be transferred to their farms.

If each farmer would devote two acres to a garden, and to finer fruits, he would be compelled to be more careful in trimming his trees, in sowing his seeds, in keeping them free from weeds. The habits thus formed would extend throughout his estate. We see this effect in farmers near the great towns; they learn to be their own grafters, and pruners, and their care of their general culture keeps pace with their progress in gardening.

But perhaps it will be replied, we cannot afford the time; it will be too expensive. What! cannot our farmers afford as much time as the common labourers of other countries who work from sunrise to sunset for from thirty to forty cents per day? No, this is not the real difficulty. It is, that the ease of getting an ample support in this country relaxes our exertions. But the progress of manufactures and

population will soon bring about other habits, and we hope within a few years to see nurseries of the cherry, and the peach and the pear, as well as of the apple, in all country towns,—though we think, not only that the last is far the most important, but that it is with that, our internal improvements must commence. Till every farmer can lay up his ten barrels of excellent winter apples for his *own use*, we shall not expect much progress in other branches of gardening.

1791

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DR. T. W. HARRIS OF MILTON, UPON THE NATURAL HISTORY OF THE SALT-MARSH CATERPILLAR.

In the present state of agriculture, hay has become, an important product to the farmer in this vicinity. From the high price and the increased demand for the imported and cultivated grasses, the indigenous and natural growth of the soil must rise in value; and of this perhaps none is more valuable, on the seaboard, than that of the salt-meadows.

But various causes have contributed to disappoint our hopes in the crop of salt-hay, and among those, the most apparently unavoidable are the ravages of insects. Of these, the caterpillars and grasshoppers have become the most formidable, by the great extent and the annual increase of their devastations. Meadows, where they have foraged, are entirely stripped of their covering; every green blade disappears before them;—what the caterpillars have left being devoured by the grasshoppers.

The object of this paper is to attempt to elucidate the natural history of the former of these insects, with the hope that it may lead to some sure method of exterminating them, or of limiting their ravages to a shorter period.

Caterpillars were observed, upon the salt-marshes, bordering Charles' river, near Cambridge, some ten or twelve

years ago ; since which time they have gradually multiplied and extended over the contiguous marshes. They were once by a high tide and strong wind driven upon Boston-neck, near to Roxbury line, where they laid in "winrows," apparently dead ; but after the storm had abated they were resuscitated by the heat of the sun, and commenced their depredations anew, overrunning gardens in that vicinity and destroying every green leaf in their path. Thence, I presume, they migrated to the eastern side of the neck, and have followed the meadows as far as Quincy. To what distance they have spread on the north of Charles' river, I have yet to learn. They are also found on the marshes in Kingston ; but probably originated from a different source from those in the environs of Boston.

The salt-marsh caterpillars are produced from eggs, laid by moths in the middle of June, which are hatched in the air, in seven or eight days afterwards. These eggs are nearly round, less than a grain of mustard, and about eight hundred in number from one female. The caterpillars are small and feeble at first, eating only the most tender part of the blade of grass ; but rapidly increase in growth, and, in seven weeks or fifty days,* attain their full size, having repeatedly cast their skins. Individuals, at this period average one and three quarters of an inch in length. While growing they change the colour of their hair very remarkably ;—being nearly of a mouse colour when small, and of a brownish hue when fully grown. Of these, at maturity, there are two shades ; some being of a dun colour, and others much darker.†

The body of all true caterpillars is divided into twelve segments besides the head.

Each segment, in this insect, is covered with twelve yellowish tubercles, arranged, rather irregularly, six upon each side : from these proceed the hairs, giving the predominant

* They continue in the feeding state about as long as the apple-tree caterpillar, which is produced by the *Phalena Neustria* of Linné.

† The dark coloured larva is represented in the drawing.

colour. The tubercles appear to be analogous in function to the bulbs of the hair in the human subject : they are, in truth, but common bulbs, from which tufts of hairs grow and are nourished, in the same way as each single hair grows and is nourished from its appropriate bulb. Between the third and fourth tubercle, on each side of the median* line, is a stigma or spiracle, of which there are eighteen, or two in every segment of the body, except the second, third, and last. The spiracles are the organs of respiration, and are the same, in number, in all the true caterpillars.

The colour of the body, divested of the hair, is yellow, shaded at the sides with black ; and there is a blackish line extending along the top of the back. The spiracles are white and very distinct.

The hair proceeding from the three uppermost tubercles, on each side of a segment is almost black, as well as that from all the four first segments of the body. That from the tubercles at the sides is of a much lighter shade. On the two last segments of the body the hair is much longer than the rest.

This caterpillar, like most others, has eight eyes, four upon each side of the head. These are not to be distinguished without the aid of a microscope. They are situated just above those white feelers, so plainly seen attached to the upper lip. The eyes are here arranged in a semicircle, whose convex side is directed anteriorly.

The jaws are two, strong and corneous, and their operation, in eating, may be distinctly heard as well as seen.

It has sixteen feet ;—six anterior and horny, and ten posterior and fleshy. These enable it to run with considerable celerity, as we may see, when the insect is at its full size ; at which period it commences the wandering state, and leaves

* I have taken the liberty to employ this phrase, which is a technical one in Anatomy and Physiology, for that line which divides the animal into two equal and symmetrical halves, and I would indicate by it a dark line running upon the top of the back, the whole length of the body of this insect.

the meadows in search of a place of security for forming its cocoon.

These caterpillars are endued with a great degree of vitality; for long immersion in water does not destroy life. Being often exposed to that element, they seem provided with the power of enduring its approaches. They feed twice in the day; about ten o'clock in the morning, and four in the afternoon. If overtaken by the tide while feeding, they mount to the top of the grass; and then, if obliged to relinquish their hold, contracting themselves into a circular form, they commit themselves to the water. On this they float and are carried to the superior parts or borders of the marsh. There they are left, with the wash of the sea, in heaps, but alive, and in a short time ready to recommence their depredations upon the meadows. But when not engaged in feeding they conceal themselves at the roots of the grass, where they are equally secure from the effects of the water, even though covered by it. In this way also they pass the night. The hair, upon their bodies, appears to possess a repelling power, which secures the spiracles from the admission or access of the water; for, were this to be the case, the insect would be drowned. We should suppose that the tide, on receding, would sweep away many of these insects; but this is not the case: for in consequence of the irregularity of our shores, and of the power, which these caterpillars have of remaining, uninjured, on the surface of the water, for a long time, they generally gain some place of lodgment and safety.

Their most favourite food is the '*Onion-grass*,' which is very succulent;* but they are not fastidious, and eat with avidity '*Fox*' and '*Bottom-grass*,' and even '*Thatch*' and '*Sedge*.' Of the '*Black-grass*'† they are not so fond, probably because it ripens sooner than the others, and is found

* It is so full of juice as to be with difficulty dried.

† *Triglochin maritimum*, L. sometimes called the sea arrow grass. This is considered by Mr. Lowell as the most valuable species.

nearer the upland, and thus, before it is reached, it becomes too dry to furnish the juices by which they are nourished.

By the first of August, generally, these insects have attained their greatest size. They now become very voracious, and continue eating all the day and night, without intermission. Soon they leave the meadows, aggregated in great numbers, and commence the wandering state, or 'begin to run,' as is the phrase, devouring every thing in their progress. Corn fields, gardens, and even the coarse and rank produce of road-sides afford them temporary nourishment, until they have found a place of security from the tide and weather, and concealment from their enemies of the animal creation. A stone-wall, a wood-pile, fencing-stuff, and even hay-mows and stacks are the resorts of these caterpillars, where they intend to take up their winter quarters, and construct their cocoons. I have heard of their being dug up, in vast quantities, from the ground upon the edge of a salt-marsh; but, in this instance, it is probable that, being prevented by ditches in their attempts to escape from the marshes, they were prompted by instinct to take refuge deep in the bank.

The cocoons are formed of silk interwoven with the hairs of their bodies, and lined with a silky lamina of a dense texture. These cocoons retain the colours peculiar to the caterpillar; those being brown, which are fabricated by the dark larva, and the others much lighter coloured. If we examine the recent cocoon, we shall find the caterpillar within it entirely destitute of hair, and much contracted. In a few days it casts its slough, and becomes a chrysalis, of a dark brown colour, and about three quarters of an inch long.* In this state it passes the winter, and, within the first and twentieth of June, the moth emerges from its chrysalis and cocoon, and flies towards the meadows; where, after the hymenaeal rites are celebrated, and the eggs deposited, it dies.

* This is their average length; but some are longer and larger, as those represented by figures 2 and 3.

The moth is the perfect state of the insect. There are two varieties, as to colour, corresponding with the caterpillars from which they are produced. From the dark caterpillar and brown cocoon proceeds a moth with ash-coloured wings; and, from the lighter coloured larva and cocoon, is disclosed a moth whose upper wings are white, as are also the under wings in some individuals. These colours do not designate the difference of sex: for though the upper wings' of the male are invariably white, those of the female are not as invariably ash-coloured; but this difference or variety of the female will be more distinctly described below. I would also mention that the male, and the light-coloured variety of the female, both proceed from caterpillars and cocoons of the same colour.

The male moth will be first described.

Head and thorax white; eyes black; antennæ black, and doubly pectinated. Body orange-coloured, with six black spots on the top of each ring, and a white line between a double row of black spots on each side;* beneath the abdomen is a single series of four or five small spots: tail white. Upper wings white above, orange coloured beneath, spotted with black upon both surfaces: under wings both above and beneath orange-coloured, with a few large black spots. Thighs orange coloured; legs and feet white, spotted or banded with black.

Female—Head, thorax, tail, both surfaces of the upper and under wings, under part of the abdomen, and the thighs entirely ash-coloured. The wings are spotted with black. Upper part of the abdomen as in the male. Antennæ doubly (but slightly) serrated, not pectinated.

Variety of the female—Head, thorax, and tail, white. Upper part of the body as in the male. Upper and under wings white upon both surfaces, and spotted with black. This variety very much resembles the male, when the wings are clos-

* The upper consisting of six, in number and size corresponding with those on the back, and the lower of 4 or 5 spots, which are smaller than the former.

ed, for then the under wings are not to be seen. It is however easily distinguished from the male by its antennæ which are serrated : and when we examine the under wings, and the inferior surfaces of the upper wings, and body, we find them to be destitute of the yellow or orange-colour, peculiar to those parts of the male.

I would only add to this description, that the moths, of both sexes, are furnished with a short tongue, separable into two filaments ; and have also two scaly palpi, above the mouth.

This insect is closely allied to several others, very common in Europe, and some of which are also found here ; such as *Bombyx lubricipeda*, *Bombyx erminea*,* &c. These form one family, and are arranged under the genus *Arctia* of Latreille, and Leach. This genus contains those moths, which have two scaly feelers ; pectinated or ciliated antennæ ; a short membranaceous tongue, composed of two, separate filaments ; and trigonate, deflexed wings : the caterpillar having sixteen feet.

Professor Peck, to whom this moth was shewn, considered it as a nondescript ; and proposed to call it *pseud-erminea*, bastard ermine, from its affinity to the above mentioned *Bombyx erminea*.† I would therefore define the subject of this memoir.

Arctia (*pseud-erminea*) *alis masculis anticis albis ; posticis fulvis, utrisque nigro punctatis : tergo fulvo, sex maculis nigris suprâ notato ; ventro quinquefarié nigro punctato. Fœmina variat alarum colore.*

Larvæ gregatæ ; verrucis luteis piliferis.

Pupa folliculata.

Interdum maculam septimam super postrema corporis parte videmus. Fœmina alis (anticis posticisque concoloribus) albis vel cinereis, nigro punctatis.

* *Arctia lubricipeda*. Leach. *Arctia Menthastri* ?

† *Bombyx* (*Menthastri*) *alis deflexis albis nigro subpunctatis ; abdominis dorso fulvo, nigro punctato ; femoribus anticis luteis.*

Abdomen album, quinquefarié nigro punctulatum ; dorsoque fulvo. Antennæ subtus nigre. Fabr. *Entomolog. Systematica.*

There are two facts, in the history of these caterpillars, that should be ascertained. First—the place where the eggs are deposited; this I have not as yet been able to discover; those eggs, which I obtained, were laid under glass vessels upon paper. Probably they would be found around the culm of the grass, or regularly arranged upon the leaf. Secondly—whether, by bringing home, with the hay to our barns, the caterpillars when fully grown, we are not liable to introduce them eventually into our uplands, where they might become as it were naturalized; and thereby increase the evils we already suffer from their devastations. This we have some reason to fear; since we know that the caterpillar at one period, (and that sometimes for several days,) feeds indifferently upon all green herbage. Some observations, made upon doubtful specimens of the larva and perfect insect, found occasionally on the uplands, favour this opinion. The peculiarities in the appearances of these specimens may possibly have arisen from a want of the food most natural to the caterpillar. Still both these points are as yet merely matters of conjecture; further examination must establish or refute them.

From observation and experience I would recommend the following plan, by which we may lessen the evils that we suffer from this enemy.

First, to cut the grass early in July; and secondly, to burn over the marshes in March. In defence of early mowing, it may be said,—that it is the only way by which we may save the crop from those meadows where the caterpillars have multiplied to any extent. The preceding history furnishes the data, from which to calculate the best time for effecting this purpose.

We have seen that the caterpillar is hatched about the twentieth of June, and that its ravages are continued seven weeks. If then the meadows, in one vicinity, are mowed about the fourth of July, the caterpillars, being small and feeble, will be deprived of their means of nourishment, and be-

ing unable to wander far, will die, before the crop is gathered into the barns. By the process of making the hay, most of the succulent juices are evaporated, and the grass becomes so dry and hard as to resist the efforts of these little devourers. Thus we see that the Black-grass, by ripening early, is rejected by them, and the crop is saved.

By the practice of late mowing, where the caterpillars prevail, the crop is diminished, immense numbers of caterpillars and grasshoppers are left to be dispersed upon the uplands, to multiply and increase the existing evil; or are brought in to perish in our barns and stacks, where they communicate a most unpleasant flavour to the hay, rendering it unpalatable to our stock, and occasioning a waste of fodder.

Many beneficial effects result from burning over the marshes in March. This has been long practiced in the British province of New-Brunswick, and is getting into use in this vicinity, to the manifest improvement of the crops. By it the stubble or "old fog" is consumed, which becomes more necessary from early mowing, in the preceding year. By this means also we may destroy innumerable eggs and larvæ of grasshoppers concealed in the grass* the past autumn, and which, if matured, would produce a pest more formidable than that of the caterpillars themselves. The roots of the grass are not injured by burning the stubble; they are fertilized by the ashes, and in a short time afterward we shall be gratified by seeing the grass springing from the blackened surface with increased strength and fresher verdure.

The preceding observations on the history of these insects, are the result of the inquiries, investigations, and experience of the writer for several years; and the practice here recommended is one that was first suggested by necessity, and whose good effects have been reaped by many.

This little memoir is offered to members of the Massachusetts Agricultural Society, with the humble hope that they

may derive some profit from what has been a pastime to the author.

T. W. H.

Milton, 1822.

EXPLANATION OF THE FIGURES.

- Fig. 1. The full grown dark caterpillar.
- Fig. 2. View of the abdomen of the chrysalis.
- Fig. 3. A side view of the chrysalis.
- Fig. 4. The male moth.
- Fig. 5. The female.
- Fig. 6. The male moth with wings expanded.
- Fig. 7. Variety of the female moth with wings expanded.
- Fig. 8. Antennae, of the male moth, magnified.
- Fig. 9. Antennae, of the female moth, magnified.

SOME NOTICE OF THOMAS ANDREW KNIGHT, ESQ. PRESIDENT
OF THE HORTICULTURAL SOCIETY OF LONDON. HIS EXPERI-
MENTS AND PRESENT TO THIS SOCIETY.

[By the Corresponding Secretary.]

IF any apology could be necessary for the brief and imperfect notice which we are about to take of one of the most distinguished cultivators of the age, of a man who has done as much to enlarge the boundaries of theoretical agriculture, and horticulture, as any man living, while he has at the same time done more than any man with whom we are acquainted to advance that science *practically*, it will be found in the kind expressions of his regard for *our country*, and his generous exertions to make *us* partakers of the improvements he has actually effected in his *own*. To those who may be disposed to consider horticulture as less interesting and less within the province of this society, we would observe (at the hazard of *repeating* and *reinforcing* the remarks we made in

first article) that it is precisely the branch of agricultural industry which in *our* country needs the most attention. It is the one in which we are most deplorably deficient. So long as we were surrounded with Indian neighbours, and our crops were so precarious that our only anxiety was to procure bread corn sufficient for subsistence, it was natural, that we should be indifferent to the rich profusion of vegetables and fruits, which nature has provided for our luxurious enjoyment. In this particular, we can without blushing, compare ourselves with the European nations at a period not far distant; and when we learn that the water-cress was the only sallad for the royal table in the reign of Queen Elizabeth, we may not be surprised at the scanty supply of our own tables, fifty years since. But we are past that age, and we see no reason, why we should not have the finest melons of Persia which we can grow in the open air, while a Russian Prince *will* enjoy them in spite of nature, by expensive hot-houses heated by steam. We feel only a sentiment of humiliation, when we reflect, that countries which the sun never heats, produce the most luxurious fruits, while *our* sun wastes its powers in many parts of our country on a rich and productive soil, which is applied, in most cases, to the raising of the coarse vegetables, which our Indian predecessors bequeathed to us. In this remark, we refer only to vegetables for the table, not to our invaluable staple articles.

Much has undoubtedly been done in the vicinity of our great towns, and horticulture has within our memory made a progress equal to our growth and improvement, but much remains to be done even here, and the inhabitants of the country at large may be considered as to horticulture, in a state of nature, excepting always some liberal, and spirited individuals who have made horticulture their study. After the provision for the support of life, come our comforts and rational luxuries, and if these can be obtained, without neglecting the more substantial and important articles, it is our interest to procure them. This is our apology for introducing the character, discoveries, and exertions of Mr.

Knight. He has devoted his life to the investigation of the physiology of plants, and it has been his rare merit, to submit his theories to the *best test*, that of experience. He no sooner settled a principle than he undertook to shew its truth by actual experiment, and to prove its importance, by applying it to the practical amelioration of horticulture. He early announced, that individual varieties of plants have their *limited* age; that although by culture, and in favourable circumstances, they may survive that age, they generally after that period decline and become weak, and of course unprofitable. With respect to the potatoe, he ascertained with as much precision as the nature of such a subject will admit, that the specific varieties do not last in perfection more than fourteen years. No observing man in any country could doubt, as to the temporary duration of the varieties of this vegetable, however he might question the accuracy of the *precise limits assigned by Mr. Knight*. There is not a single variety of the potatoe now cultivated with us with which we were familiar thirty years since; and within twenty years, we have known several sorts which were invaluable, gradually run out; and this too, not from any want of attention, but from the impossibility of raising them. We will mention two sorts, as examples, the round cranberry potatoe, better than any now in market, a great bearer, excellent in the spring after other potatoes become flaccid and watery. We continued to raise them, till they would not produce double the amount of the seed put in. They are now *extinct*. Another was a blue potatoe, with white spots—a delicious variety, brought from England direct, and also from Connecticut. For the last four years, it has become extinct. Some persons are deceived by appearances. We have always *white* potatoes, and they think them the same, but the varieties are infinite, and are constantly changing. The long reds, called the River Plate potatoes, have essentially changed their character, and ten years hence we shall no longer see that very valuable variety. So far our experience fully supports the theory of Mr. Knight.

Mr. Knight, if not the first to suggest the mode in which

the sap circulates in vegetables, was, we are persuaded, the first who proved it to the satisfaction not only of men of science, but of the most incredulous and ignorant. Some of his early experiments were made on plants whose parts are transparent. He took, we believe, the Balsamine, or "Touch me not." He watered it with a coloured fluid. He saw that the fluid passed up in the central parts of the plant, made its way into the leaves and having coloured them, it returned by the bark which was the last affected. For the information of those who have not attended to the structure of plants, it may be remarked, that they consist of an external covering which is generally very thin, called the Cortex; of a softer substance, which is usually confounded with the other, called Liber; of a white portion, called by botanists, Alburnum, and commonly known as "sap wood;" and the Heart-wood, which in more durable trees is usually much the most dense and solid. Mr. Knight maintained that the sap ascended in the Alburnum and descended in the bark, or between the bark and the Alburnum, where it made its deposit of new wood. This theory was not without its *practical* value. It explained the reasons of the fact of the destruction of trees by decortication or a *too great removal of the bark, if accompanied with such wounds in the Alburnum as to prevent the formation of new bark.* It was known before, that you might cut off half the top and half the roots of a tree and it would still flourish, but if you should make a wound of one inch wide through the bark, and into the Alburnum, the tree inevitably perished. His theory led to various experiments, founded upon its undoubted truth. Mr. Williams of Great Britain applied it to the early maturation or ripening of grapes, by taking off the bark to the extent of a quarter of an inch in width; it was found that the sap was impeded in its descent, the parts above became larger, the fruit swelled and ripened *earlier and was more large and fine.* This experiment was repeated in this country by the writer of this article, and its success was so perfect, that nothing could

be said against the theory by those who were eye witnesses of its extraordinary effects. Another consequence followed from this discovery of Mr. Knight. If fruits can be hastened to maturity, and enlarged and improved by partial and prudent and judicious decortication, why, it was asked, may it not be applied to the bringing trees earlier into bearing, than by the ordinary process of nature? This it was said would necessarily be the effect of detaining the sap preternaturally in the branches, and thus forcing the plant to produce blossom buds instead of leaf or branch buds. It was before well known to gardeners, that any thing which checked the growth of a fruit tree, hastened the production of fruit. It was reserved for Mr. Knight to shew the *causes*, and to submit the whole process to rules as certain as are known in any other branch of natural science. In *all*, we are stopped at certain points, when we rashly venture to penetrate the great secrets of nature, but this is no reason why we should not search as far as we can find intelligible explanations and facts.

Perhaps it would be satisfactory to our readers to have experiments *at home* stated to them, in support of Mr. Knight's theories, and we trust that due credit will be given to our statement of *actual* experiments, especially as nothing would give us more pleasure than to afford any cultivator the most perfect satisfaction as to the accuracy of these statements, if he will do us the honour to call and examine the subjects of our experiments.

On two orange-trees from St. Michael's, which had never borne fruit, though we had had them many years, we practised decortication, taking off a ring of the bark of half an inch in width. In the following spring, this year, the gardener expressed to me his surprize, that those limbs were literally loaded with blossoms. He had not been in the secret. We pointed out to him the decortication or ringing, or as we say, the "girdling," and it was found, that while every other part of the tree was without blossoms, those which were operated

upon were *far too greatly covered* with them. In this case we committed a mistake. The orange-tree puts forth only once in a year ordinarily in our climate, or under favourable circumstances, twice. Ringing or girdling should only be executed when the sap is in the greatest possible degree of action. These limbs are not healthy, and we fear will not hold their fruit, but the experiment shewed the principle in its clearest light. The general rule is, to girdle when the tree is in its most rapid state of growth, to make the decortication or ring larger or smaller according to the vigour of the plant, but so little in all cases as to enable the tree to close the wound during the same season. We made a similar experiment on a flowering plant, the beautiful *Passiflora Alata*, and we threw it by this process into flower, at a season in which it never flowers in the ordinary course of nature, that is, in the month of August. Its usual time of flowering with us, is October and April.

But we proceed to experiments out of the green house, within the reach of *all* cultivators. We tried this plan on 20 young pear trees, on one, two and three branches—trees, which have been grafted from 10 to 12 years, without giving fruit. The spectacle on so extensive an experiment, is really interesting and instructive, as shewing the power of human art over nature. A single branch in a tree is at this hour, when we are writing, absolutely snowy white with flowers, while every other branch on the same tree is as barren, and unprolific, as it had been every preceding spring, when it had blighted our hopes. We sported very much in our experiments. On some trees, we girdled one, and on others 2 to 5 branches, but the experiment is so perfect, that before you reach the tree, you can decide precisely which were and which were not girdled. The same experiment was made on plums, with equal success.

Let us here, however, check any disposition which may have been excited in favour of this mode of hastening early bearing, by saying, that Mr. Knight, from whose theory the

experiments have been derived, is opposed to it on a *general scale*. He thinks it will shorten the longevity of the trees subjected to it; that it is adverse to the course of nature, and is only justifiable when you wish to be certain, whether the trees you have *bought or grafted* are really what you *supposed they were*, or when you have new seedling fruits, to enable you to ascertain some years earlier their qualities, in order to decide, whether you should reject them or not. I do not carry my apprehensions so far (I say it with great diffidence) as this learned cultivator. The effect of judicious girdling is nearly the same with *grafting*; that produces a similar interruption of the sap. a callous is formed between the original stock and the graft, and yet we see the branches continue productive, and enjoy excellent health. No doubt great discretion and prudence should be exercised in the application of it. Mr. Knight has adopted other modes of hastening the early production of fruit on young trees. Some he raises in pots and boxes, others he bends down either to an horizontal, or even to an *anti-perpendicular* form, if we may be allowed a novel expression. The sap is thus impeded in its course, and Mr. Knight has shewn, that the principle of gravitation is as operative in the fluids of *vegetable life*, as in others. The effects are nearly the same as those of girdling, producing earlier bearing.

But these are but a part of Mr. Knight's labours and services. Following up the Linnæan theory of the sexual system of plants, (or to speak in language better adapted to all classes of readers,) proceeding upon the well established fact, that certain parts of the flower, called Anthers, produce a dust called Pollen, which is indispensable to the fertilization of the germ or fruit, a fact known to be true, before Linnæus existed, but which never received perfect confidence, till he demonstrated it. Mr. Knight has devoted 35 years of his life to the practical application of this theory, which he has not only demonstrated by hundreds of experiments, but he may be said to have created many new and valuable varieties of

fruits hitherto unknown. He has obtained new varieties of the pear, the apple, the grape, the plum, and the strawberry. He has demonstrated, that we can correct the defects of one variety of fruit by another, by introducing the farina of a pear for example, which has too much ansterity or acidity, into the flower of another pear, which has too much sweetness, too insipid a sweet, you may give to the new product a taste and flavour, which may be perfectly agreeable. So it has been ascertained by Mr. Knight, that by the same process, a fruit which is defective in vigour, which bears with great reluctance a cold climate, may, by intermixing it, or coupling it with another tree of the same species of a hardy character, acquire the vigorous constitution of one of its parents, and still retain the excellent qualities of the other parent. There is, indeed, no end to the changes which have been produced by Mr. Knight and others, not in fruits, but in flowers, by this process. We are aware, that this statement, to those who are ignorant of his exertions and success, may seem to be extravagant; but we can affirm, that he has done more to improve horticulture than any person of whom we, in this western world, have any knowledge.

These remarks were intended as an introduction to a notice of the efforts which Mr. Knight has generously made to communicate to America some of his improved fruits. In 1822, I had occasion to write to Mr. Knight to procure the last numbers of the Horticultural Transactions, for the College; he replied to my letter in the most friendly manner, appeared to be highly gratified with opening an intercourse with our country, expressed his strong attachment to it, his disgust at the libels on our country in some of the presses of Great-Britain, and his intention to send to us the best new fruits which the late improvements had introduced; declaring at the same time, that though he should confide them to my care, it was under the full belief and expectation, that I should disseminate them as extensively as possible. I need not say, that he could not have given me a charge more agreeable; and that with-

out the smallest regard to personal interest, I shall circulate as rapidly as possible, by buds and scions, every variety of fruit he may send. I shall consider myself steward for the public—but I ought to remark, that as he sends but one individual specimen, the progress must be slow, and that I must exercise a discretion in giving scions and buds to such persons as will be most like to take good care of them; but I shall do it in all cases on the express condition, that the same freedom of circulation shall be practised by all.

I shall close this article by inserting Mr. Knight's last letter to me, accompanying certain fruit trees sent this spring—

“ *Downton Castle, Feb. 15th 1823.*

“ JOHN LOWELL, Esq.

“ *Dear Sir,*—I have this day sent to Messrs. Thornely, of Liverpool, to be forwarded to you, a box containing trees and grafts of *ten new varieties* of pears, which *here* ripen in succession from October to May, and which I conclude in your warmer summer climate will ripen in succession—I could have sent a larger number of varieties, but those sent are the best and the most productive, and inferior varieties that would ripen at the same seasons, I did not think worth sending. Each tree has a label and is also numbered besides, and I will now give you a *concise description* of each variety. I have also sent grafts of each variety from *bearing* trees, that you may certainly have each variety.

No. 1. Cassiomont—a large pear, yellow upon one side and red upon the other, ripens in October.

No. 2. Tillington—This is described in the Horticultural Transactions. It is perfectly melting or rather perfectly beur-*rée*, and very rich, sprang from a seed of the autumn bergamot, —and the pollen of the Jargonelle, and its form is precisely such as you would expect from such a mixture. It is ripe in November.”

[N. B. by the Corresponding Secretary.]—(This example will shew our cultivators the process of Mr. Knight and the great changes produced by it. He removed from the flowers

of the autumn Bergamot all the anthers. He impregnated the germ with the pollen of the Jargonelle. He took the seeds of the fruit, thus obtained, sowed them, and produced a *new pear*, having a mixed form, between that of the Jargonelle, which is long and eminently pear shaped—and that of the autumn Bergamot, which is flattened, and rather apple shaped—and it ripens nearly two months *later* than either of its parents. Being a new seedling, it will have strength and vigour and endure many years. Mr. Knight computes the longevity of a new variety of pear at more than 150 years. We may then form some judgment of the value of such an acquisition, when we know and have perceived for many years the gradual deterioration of the St. Germain, St. Michaels, Chaumontelle, &c.)

“No. 3. Urbaniste—A large and nearly globular pear—colour yellowish green—the flavour of rose water. Season, November.

“No. 4. Beurré Knox—Large, pear shaped, yellow. Season, November and December, an excellent pear.

“No. 5. Marie Louise—Middle sized—colour, pale yellow. Season November and December, a most excellent variety.

“No. 6. Napoleon—Somewhat smaller than the Marie Louise, exceedingly melting and juicy. Season November and December.

No. 7 Florelle—Middle size and pear shaped, colour bright red, nearly scarlet, with minute dark points, a most beautiful and excellent variety. Season November.

“No. 8. Colmar d’Hyver—Shape varying from nearly globular to pear shaped, colour yellowish green. Season January—a melting pear of first rate excellence and very productive.

“No. 9. Passe Colmar—Large and pear shaped, but very broad towards the eye. An exceedingly fine melting pear, which by being kept in different temperatures, may *here* be brought to table in perfection from the beginning of January

to the middle or end of April. This variety is productive to a fault. I am generally obliged to take off 9-10ths of the fruit.

"No. 10. Hardenpont de Printems*—A large pale green pear with rather a rough skin. It ripens *here* (in England) in the end of April or beginning of May—and its flesh at that period nearly resembles that of the Brown Beurré in Autumn. It is a very productive variety, and in *your climate* will, I believe prove the most valuable variety of all.

"No. 11. Gulliflower apple—*Grafts only sent*—Form angular flesh perfumed and remarkably yellow. It is in perfection in *winter and spring*. It would afford in a warmer climate a most excellent cider.

"No. 12. Sweeney Nonpareil Apple—A very large variety of the Nonpareil, very excellent ripened on a south wall, or in a very warm season, and good situation, but too late for *our climate*. I believe it would suit yours. It is entirely new.

"No. 13. Black Eagle Cherry.

"No. 14. Elton Cherry.

"No. 15. Waterloo Cherry.

All these cherries are new varieties produced by Mr. Knight—they have been described in the horticultural transactions and coloured plates of them given—they have all of them valuable properties.

It should be recollected, that Mr. Knight often fails in his numerous experiments, and it is only the excellent new varieties which he presents to the public.

"No. 16. Downton Cherry—It is a white or pale red cherry with white flesh, and it is believed will prove an excellent variety.

No. 17. Cooes Golden drop plum—A fine variety from the original stock.

* So named I have observed from Monsr. Hardenpont of Mons in Brabant, who raised it as a seedling. It is christened by the French Gardeners Beurré Rance, but the English cultivators give credit to its creator, or raiser.—*Cor. Sec.*

No. 18. A very large new plum of a green colour, which promises well.

Mr. Knight added also two hundred Downton Strawberry plants ; a new variety, but they perished in the passage.

The trees were admirably packed, and although they started more than could have been desired on the passage, yet there is no doubt we shall save every variety except perhaps one or two of the cherries—but had they all perished, our feelings towards Mr. Knight would not have been affected. His good intentions—his kindness towards our country, his philanthropy, would not have been the less. Unsolicited, he has bestowed upon us, what is of no small value, independent of the excellent intention. One new, and excellent variety of fruit is a great gain. How much have the St. Germain and St. Michaels Pear contributed to the pleasures of our tables? Who would not be pleased to have *ten new and excellent varieties* of pears, in the prime of youth, to supply the place of these, which we must soon lose? We trust we shall find some apologists for the zeal with which this article is written. There is something so kind, in this intercommunication between cultivators of different countries; it seems to be such a forgetting of the old circumstances of separation, that one cannot but be pleased with it.

PASTEL, OR WOAD, AND ITS CULTURE.

WE insert with great pleasure, the following communications on the culture of Woad, (*Isatis Tinctoria*), and General Dearbern will permit us to express our sense of the obligation, which the public are under to him, for his continued efforts to introduce the cultivation of this plant, now so important

to our manufactures. During the late war, General Dearborn made some interesting experiments on a small scale, to prove the *practicability* of raising this important dye-stuff in the United States. Though his experiments were not extensive, they were entirely satisfactory. He did more. He compiled and wrote, and published at his own expence, a treatise on the culture of this plant, which contains all the information necessary for a cultivator of it. The peace came; with it, low prices; and the subject lost a portion of its interest. But great changes have been wrought during the last seven years, and the culture of woad has again become a subject of deep interest. The fact, that an extensive manufacturer, like Mr. Crowninshield, has found it for his interest to cultivate this plant, and has proved its value practically, seems to set the question at rest. We invite our cultivators generally, to read with attention these communications, to procure Mr. Dearborn's work on Woad, and to make some moderate experiments upon this article.

Mr. Dearborn's letter to Mr. Lowell, April 9, 1823.

Dear Sir,—I inclose a letter from Richard Crowninshield, Esq. on the cultivation of woad, which, if you think proper, please to cause to be inserted in the Agricultural Journal. It is the largest experiment that has been made in this section of the country. It shews that our manufacturers can raise this valuable article for the dyeing vat, at little expence, and with great ease.

With great respect, your most humble servant,

H. A. S. DEARBORN.

Extract of a letter from Richard Crowninshield, Esq. of Danvers, to Brigadier General Dearborn, dated March 29, 1823.

"I planted about 5 acres with 9 bushels of woad seed, in 1822, some of which seeds you was so obliging as to present to me. The remainder was procured from Connecticut, New-York, and some were of my own raising in 1821, from

seeds received from Dr. Nichols, in 1818. There was no difference in the plants raised from these several parcels of seed. The soil was light, dry, and sandy. The land was broken up in the spring of the same year. The sods were removed, and the land crop ploughed, harrowed, and furrowed out 2½ feet between the furrows. About 40 cords of good compost manure, (consisting of horse dung, cow dung, and pig manure, mixed with about one-fourth part of its bulk of bog turf, which had been in heaps about 2 years, with some ashes, lime, &c.) were spread on the land and ploughed in as for Indian corn; the furrows were slightly earthed. The quantity of seed 2 bushels to the acre. They were sown rather thickly in the furrows, in order that in gathering them, there might be a full handful of plants to crop at the same time. The seed was lightly covered. It was all sown before the 20th of May. It grew well, but required 5 or 6 men to keep down the weeds in July. It was all picked or twisted off quite to the ground. It was then again cleared of weeds, and in 14 days the new leaves were from 9 to 14 inches long in rich spots. The second crop was gathered from the 15th to the 20th of August, and produced about 4 tons of green leaves, about one ton less than the first crop. The dry weather prevented a third crop from being taken. *Some leaves* were however taken in October, 5 inches long, but I preferred to let them generally remain to protect the plant against the frost, *having the last winter lost* an acre of woad, and an acre of teasels, by frost. The loss in woad was much less than in the teasels; the plants which I lost of the latter would have sufficed for 4 acres, and have produced much money, being worth from 50 cents to 75 cents for every hundred plants. All the woad plants are now alive, (that is, on the 29th of March, 1823,) and have grown half an inch. I have also many thousands of teazel plants in good order.

“ The expense of cultivating woad is about equal to that of cultivating onions, and 10 men will crop an acre in a day.

“ There is something remarkable in the woad plant. Some

roots which produced seeds last year, sprouted again from every joint like cabbage sprouts. They are now again sprouting from under the snow, the leaves are green, and may again be cropped this spring. *I shall have a great quantity of seed to dispose of at \$1.50 per bushel. I paid 2 dollars. There are but few men in America who understand perfectly the preparation of woad for the dyer. Our farmers, should it become the policy of the nation to raise and manufacture all our own woollen goods, equal to the national consumption, will probably find it for their interest to raise woad, and deliver it green or dry, (as may be most convenient for them) at regularly established mills, exclusively devoted, as in England, to this article. Inclosed you have an article from the New-York Statesman on woad."*

The article referred to from New-York, is interesting, and is, therefore, here inserted.

N. B. Gen. Dearborn has still a few copies of his work at the command of persons disposed to cultivate the woad.

AMERICAN MANUFACTURES.

Extract of a letter from Cincinnati, Ohio, to the editors of the Statesman.

"Having seen several communications in your valuable paper, respecting the *art of dyeing* and the cultivation of the *woad plant*, by which it seems that manufacturers in your part of the country are doubtful, whether woad can be produced in the United States, in the same perfection as in England, I have thought proper to state, for their information, that in 1821, I planted two acres, and found the produce to be at least one fourth more in quantity, having cut *seven crops* during the season. In England, I never knew more than *five*. Its strength, as a mordant, exceeded the English at least one third, containing three times the colouring matter I have ever found in any woad, after an experience of forty years, in an extensive trade in England.

I herewith forward to you some patterns of wool, dyed
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with this woad, and regret I had not preserved some coloured with woad only, by which artists acquainted with the subject, would know its superior qualities. I have always observed in England, that our woad plant produces more in quantity and better in quality, in a warm season; and I attribute its great perfection here to the same cause.

Your manufacturers of woollens cannot fully succeed until they become well acquainted with this useful plant, as no good blue, black, green, or purple colour can be produced without it. All other modes are imperfect, expensive, and mischievous. Having made this country my home, I shall take pleasure in communicating this knowledge, to any one that may need it, for a moderate compensation. *Written directions* may be given for growing and preparing woad, without any chance of error; *but to use it properly*, requires considerable attention and good instructions.

I suppose it may be produced for three or four cents per pound—perhaps for something less. I have sold some of mine at Baltimore, this season, for 12 1-2 cents, by which you will perceive there is great profit in its cultivation. In my opinion no substitute for woad will be found worthy of attention, although it seems your friend *Hopson* thinks he has discovered one, which will answer the purposes both of woad and indigo. Your correspondent will confer a favour on me, by giving a description of the wild indigo plant, as he terms it. I will investigate its properties, and communicate the result to him.

Your correspondent who has written on the *scarlet dye*, appears to be acquainted with only a part of the theory of that art, as two essential ingredients are not mentioned, one of which I have seen since my arrival in this country. Your friend is also in an error in supposing he can render colour more brilliant by using steam. I have made use of steam in dying for nearly thirty years, and am well acquainted with its advantages and disadvantages. It is a cheap and expeditious mode; but it cannot be used for fine colours, such as

Saxon blue, green, pink, crimson, scarlet, orange, yellow, and all other delicate colours, *but at the expense of their beauty.*

All dyers should know, that when bright colours are wanted, the first step to be taken is to clear the water of all mineral and animal substances. This is all that is necessary to prepare the liquor for any bright colour; but if raw water be added, or steam suffered to flow into the vessel, the beauty of the colour will be destroyed, in proportion to the quantity admitted."

The letter, from which the foregoing is an extract, adds a number of other particulars, connected with the subject of manufactures. It states, among other things, that large quantities of Fullers' Earth are said to be found on the banks of the Wabash; but after diligent search, none, in a pure state, has yet been discovered in the vicinity of Cincinnati. Our correspondent has put to us the following questions, to which we hope some one will furnish satisfactory answers, as we are unable to do it ourselves:

1. What quantity of woad would be consumed annually, in the vicinity of New-York and Philadelphia, estimating one pound of woad to five pounds of wool, dyed of a dark blue?

2. Would the manufacturers give a reasonable compensation to be instructed in the art of dyeing generally?

3. Whether it would answer any good purpose, for a person who understands the manufacture of woad and its various applications in the art of dyeing, to establish himself in this part of the country?

It is proper to remark, that we are wholly unacquainted with the writer of this letter; nor have we a sufficient knowledge of some of the topics embraced in his communication, to judge of the accuracy of his remarks. *Hopson* will be able to speak for himself, where his correctness is questioned.

The beautiful specimens of colouring, accompanying the letter, may be seen at this office, where the name and address of the gentleman who forwarded them may be obtained.

[The following extract of a letter from a clergyman in Illinois was sent to us by Dr. Benjamin Shurtleff, together with samples of the seeds of the two plants described. If for no other reason, our respect for Dr. Shurtleff, whose exertions as an agriculturalist merit the gratitude of the friends of agriculture, would have induced us to publish the letter. The seeds reached us too late for cultivation last year. We shall give them a fair trial this season. We are not very sanguine on the subject. A plant, which may succeed well in Illinois, may be of little value with us. For example; the Illinois or Pecan nut, (*Juglans Olivæ-formis*), so frequent at our tables, will barely exist in our climate. Its shoots are annually destroyed, and it is ascertained by our own experiments of seventeen years patient duration, that it will never be a fruit-bearing tree with us. We cannot, therefore, calculate, that an Illinois plant will of course be successful in New England. Besides, though a substitute for chocolate or coffee may be very well in the remote prairies of that state, it may be of little value to us. But they may succeed, and perhaps prove as valuable as millet, which seems at present to be acquiring favour. They may prove valuable as *green-fodder*. We shall try them this year and render a faithful account of their growth and properties. Dr. Kilham of Wenham has, we believe, the oldest Pecan or Illinois nut trees in the state. We should be glad to be informed whether he or any cultivator in the Middle States has succeeded in producing ripe nuts from this tree.]

Copy of a letter from the Rev. Jesse Townsend to Benjamin Shurtleff. Townsend Prairie, Montgomery County, Illinois, April 20th, 1822.

RESPECTED SIR,

FROM the representations which my friend Mr. Tillson has given me of your disposition to encourage the agricultural interest of the United States, and from an inclination on my part, to co-operate with you in the promotion of these interests, I take the freedom although a stranger to present to you by the bearer, a small quantity of the *Holcus Bicolor*, or Broom Chocolate, also some of the *Orka Coffee*, and just a small specimen of cotton, which I raised last season on my plantation.

The *Holcus Bicolor* resembles in its growth and stalk the broom corn, and is very productive. It is, when rightly prepared, equally good and nutritious as the best of chocolate and affords a very healthful substitute. The way in which

my family prepare it for use, is to grind the seed in a coffee-mill, merely cracking it, then put about three gills into about six or eight quarts of boiling water, with milk and sugar, and boil all together, about five or six minutes. when it is fit for use. Some however, have the seed ground in a grist-mill and after sifting out the bran, mix with the flour a small quantity of butter, and then boil the same with milk and sugar, according to our method of preparation and give this method of preparation the preference. I believe we may easily raise sixty bushels of this grain on an acre, upon our rich Prairie, and that it may do very well on good ground at the North. It ripens about the same time with Indian corn. It ought to be planted at the usual time of corn planting, in hills about three feet apart, and about six or eight seeds in a hill.

I wish you to make trial of this grain, and if it succeeds well to introduce it to public notice in your vicinity.

The Orka is to be planted in drills about three feet apart, and the seeds six inches from each other in the drills, and will need to be hoed two or three times.

The main stalk, with small branching limbs, rises about four or five feet. The grain is produced in pods about two inches long. As soon as these begin to open, the method to harvest them is to gather the pods, as they open, with the hand, and lay them to dry thoroughly in the sun, when they will be fit to shell out, and to begin to use the grain. The preparation for the table is the same as that in the common coffee, $\frac{2}{3}$ Orka and $\frac{1}{3}$ common coffee may be used together to good advantage. If Orka is used alone, a greater quantity is necessary than in the use of the common coffee, and it possesses all the exhilarating and nutritious properties of the common coffee. From what I have experienced, in the cultivation of this excellent grain, it is my belief that 2000 lbs. can easily be obtained from an acre of our well cultivated prairie land; and I am in the belief it may be cultivated to good advantage in your country.

If an experiment should prove successful, you will confer a favour on your fellow-citizens by giving it publicity.

EXTRACTS FROM EVELYN'S SYLVA.

EVERY man of agricultural reading must have heard of Evelyn, the father of *English* agriculture—the great propagator of plantations of forest trees. He flourished during the civil wars—I say *flourished*, because though persecuted, and in hazard, he raised up a name, which will be immortal in *that* country, and ought to be venerated in every other. His misfortunes laid the foundation of his glory, by forcing him to philosophick studies. Historians, biographers and cultivators have united in admitting, that to *his* writings *chiefly*, are the English nation indebted for those fine plantations of the most valuable trees, which form at once its finest ornament—its strength—and its best riches. The civil wars had nearly destroyed their natural forests. The country was almost as destitute of fine oaks, as old Massachusetts is at this day. He created by his zeal, his eloquence, his fine philosophical spirit, a taste for planting. Many an ancient family whose finances were reduced, found themselves again restored to opulence by the provident exertions of those, whom Evelyn inspired with a passion for planting trees. Who can think of Evelyn, or Olivier de Serres, the great French cultivator, without interest? Who can contrast their achievements with those of the most successful conquerors, without feeling a decided preference for them?

We shall take as a specimen, Evelyn's reasons for preferring planting the seed, where the tree is to grow. to transplantation. "It has been, says Evelyn, stiffly controverted by some, whether it were better to raise trees for timber and the like uses from their seeds and first rudiments, or to transplant such as we find have either raised themselves from seeds, or sprung from mother roots. Now that to produce immediately of the seed is the better way, these reasons seem to evince.

"First, because they take soonest. Secondly, because they make the straightest and most uniform shoots. Thirdly, because they will neither require staking, nor watering, which

are two considerable articles, and lastly, for that all transplanting (though it much improves *fruit trees*) unless they are taken up the first year or two is a considerable impediment to the growth of *forest trees*; and though it be true that divers of those which are found in woods, especially oaklings (or young oaks) young beeches, ash, and some others spring from *self-sown* seeds, yet being for the most part dropped, and disseminated among half rotten sticks, musty leaves, and perplexities of the mother roots, they grow scraggy, and being overdripped (that is too much subject to the drippings from the trees which shade them) become squalid and apt to gather moss.

“Which checks their growth and makes their bodies pine.”

Fir. Georgicks, Lib. II.

“Nor can their roots expand and spread themselves as they would do, if they were sown, or had been planted in a more open, free, and ingenuous soil. And that this is so, I do *affirm upon experience*, that an acorn sown by hand in a nursery, or ground where it may be free from these incumbrances, shall in two or three years, outstrip a plant of twice that age which has either been *self-sown*, or *removed*, unless it fortune (happen) to have been scattered into a more natural, penetrable, and better qualified place; but this disproportion is yet *infinitely* more remarkable in the Pine and Walnut trees, where the nut set in the ground, does usually *overtake a tree* of ten years growth, which was planted at the same time; and this is a secret so generally misrepresented by most of those, who have treated of these sorts of trees that I could not suffer it to pass over without a *particular remark*.”

Such were the opinions of the venerable Evelyn, expressed to be sure in the quaint language of his age in the middle of the 17th century, and it is certainly no mean praise to say, that all succeeding cultivators have agreed to the truth and justice of his opinions. No policy can be so bad as that of digging up the weak and sickly plants of the forest to form the ground work of new plantations. *It was not Evelyn's idea.*

that forest trees should not be raised in *nurseries*, and thence transplanted to the plantation where they are to grow. He expressly refers to nurseries, and excepts from his interdiction of transplantation, trees of from 2 to 3 years old.

Those of us who have been employed in the work of planting forest trees, (on a scale miserably small we admit, and yet so important, that if every man in the state who owned a farm, had planted as many, we should have a rich supply of trees) very well know, how wise Evelyn was. We had no nurseries from which we could draw our supplies. We were obliged to resort to seedlings of the forest, but we can affirm, that we owe our success entirely to his hints. Trees of 2 or 3 years old; of two or three feet high, have far out stripped those of ten years old, and which were removed at ten feet height. Many of the latter perished or became sickly, but of the former which were so small, that we could raise and set them with our thumb and forefinger, we can shew plants of 17 years growth, which are 30 feet in height, and would almost furnish joist, and some few of them small timber for building. Nothing can be more pernicious to successful planting, than the greedy desire to have great plants at *once*. The city of Boston has always been possessed with this rage for planting great trees, and they have lost more by this course than would have made the Common a noble grove. Their trees have perished by hundreds, and we can look around and see many of our neighbours who have committed the same faults. But our object, in introducing this topic, is far more interesting. It is to shew, how much we have *promised*, and how *little* we have *effected*. One of the earliest cares of the Massachusetts Agricultural Society, was to encourage plantations of forest trees. They offered rewards for it; we believe only *two* premiums were ever claimed, and those were by Col. Robert Dodge, an Essex farmer, and by Moses Bullen, Esq. of Medfield. We should be glad to hear of the success of those experiments at this day. If 30 years since, when hard wood was sold in Boston at 2 dollars per cord, it was thought an interesting object

to encourage planting, what must it be now, when wood is worth 6 dollars per cord? The Legislature required of *all* the agricultural societies, that they should offer premiums for *new* plantations of forest trees. Has there been *one* claim for a premium since? We fear not. We want some "Evelyn" to rouse our attention to the subject. How many waste pasture grounds are there, which do not give 2 per cent on their value, which might be made in 15 or 20 years to produce double their present value by timber? Land within 30 miles of Boston, valuable only as pasture is now worth only from 10 to 15 dollars per acre, and in 20 years if well and judiciously planted, the *wood alone* would produce from 30 to 40 dollars. Let our farmers think on this subject.



THE STATE OF THE SEASON.

[From the Daily Advertiser.]

MR. HALE—I have for so many years given some account of the progress of vegetation, that I find my friends, in town and country, look for it. It is perhaps of as much use as diaries of the weather and common thermometrical statements. In some short remarks, which I sent you early in this month, I observed, that though the season was exactly one month behind the last, in the beginning of April, yet like the Siberian summer, it had advanced so rapidly, that on the first of May, it had caught even the precocity of the last season. After that communication, long continued cold easterly and northerly winds set in. On the 6th of May ice was made in the country, sufficient to bear a child of 10 years of age, and all the appearances of the progress of vegetation ceased. The buds half started from their winter protection, remained for fourteen days nearly quiescent—yet the season had advanced within a few days, and has acquired an average

rate of forwardness. Rains have been most abundant—springs which had been deficient for two years are amply supplied—the grass is well set, and the season promises abundantly as to all the fruits except apples. The shew of pear blossoms never was exceeded—the country is literally white with them. The applies will of course be less numerous, owing to the extraordinary efforts of the trees, last year—yet there will be an ample quantity, and while less loss will be sustained by the cultivator, the consumer will feel no failure in the supply. If apples may be a little dearer, the more important article of hay will probably be cheaper. It will be impracticable to give a schedule of the progress of the various seasons without repetition—yet few persons preserve the statements of former years, and it is not possible to give a correct view without comparing *many years*. This will enable the curious to make useful remarks—and it will convince all, that however different the weather, and the progress of vegetation, we have a superintending Providence above us all, who regulates *all seasons in mercy*, and compensates by the heat, or moisture at *one moment*, all that may be deficient in *another*.

The statements are made from the same tree or plant—in the same exposure, and situation, and therefore not liable to the variations, which would appear from transient observations of passengers, or travellers.

The Cherry—its first opening,

In 1813,	May 10	In 1815,	May 10
In 1816,	May 6*	In 1817,	May 6
In 1818,	May 17	In 1819,	May 6
In 1820,	May 2	In 1821,	May 9
In 1822,	May 1	In 1823,	May 7

The Pear—its first opening,

In 1813,†	May 20	In 1815,	May 20
In 1816,‡	May 12	In 1817,	May 7

* This was the most disastrously cold year afterwards.

† Cherries opened this year on the 10th of May, but cold winds kept back the pears to the 20th.

‡ This was an exceedingly cold season afterwards.

In 1818,*	May 24	In 1819,	May 17
In 1820,	May 9	In 1821,	May 13
In 1822,	May 4	In 1823,	May 13

The Apple—its first opening,

In 1813,	May 23	In 1815,	May 25
In 1816,	May 18	In 1817,	May 12
In 1818,	May 25	In 1819,	May 19
In 1820,	May 11	In 1821,	May 13
In 1822,	May 9	In 1823,	May 19

I will add the Lilac the ornament of our Election day.

In 1817,	May 19	In 1818,	May 27
In 1819,	May 25	In 1820,	May 20
In 1821,	May 20	In 1822,	May 12
In 1823,	May 22		

Thus it will be seen, that the present season is about an average one in point of forwardness, while it is far above the average in its verdure and promise.

N. B.—There is some danger, that seeds of squashes and other tender plants committed to the ground early in May, have rotted and will require re-planting. It is, we know, the fact in some places.

A ROXBURY FARMER.

Roxbury, May 22, 1823.

THE MODE OF MAKING CIDER ADOPTED BY THE RELIGIOUS SOCIETY AT CANTERBURY, NEW-HAMPSHIRE, COMMONLY CALLED SHAKERS.

[It is with great pleasure we insert this article, not only on account of its intrinsic merits, which are great, it having all the clearness, precision, and simplicity which you would expect from men so well skilled, and who make the best cider (it is said) in New-England, and who, in every thing they

* This season deserves notice, for though so late it was a fine one.

undertake are eminently successful ; but because it gives us an opportunity of speaking of the admirable example set by this description of persons in all that relates to agriculture, horticulture, and manufactures. With their peculiar tenets and ceremonies, an agricultural work has no concern ; but it is its province to recommend excellent examples of neatness in *cultivation*, and in care, and caution, and fidelity in manufacturing articles important to the farmer. It will not be questioned, that the Shakers have set a most praise-worthy example—not of industry, sobriety, and neatness *merely*, but of exactitude. They undertake nothing in which they do not succeed better than their neighbours ; and the secret of their success will be found to consist in their system of order, and the thorough and effectual manner in which every thing is performed. It is highly probable, that this sect (should it continue to maintain its ground) will finally furnish the states in which they live, with the best and purest seeds, with the neatest and most faithfully manufactured implements. We hope, that other sects of christians will shew, that there is nothing peculiar in the opinions of the Shakers, which should produce of necessity these happy and honourable results, but that they will all strive to “have every thing performed decently and in order.” We hope to be able to reply to the queries of the Shakers, as to the manufacture of woad, or rather its preparation from the leaf, for the immediate use of the dyer. They will be pleased with the letters on that subject, of Gen. Dearborn and Mr. Crowninshield.]—ED.

To John Prince, Esq. Treasurer of the Massachusetts Agricultural Society. Canterbury, March 24, 1823.

MUCH RESPECTED FRIEND PRINCE,

I RECENTLY received your very liberal and worthy favour of the 2^d ult. for which I feel a grateful acknowledgment, and hope to make you some compensation whenever you call on us again. We were very glad to hear of your safe return home.

You left with us one agricultural No. viz. No. 3, vol. 7, I fear through mistake, which (if so) we will rectify at our next interview.

The Agricultural Numbers which we now have, including those you sent us, are the following : viz. Nos. 2, 3, and 4, of vol. 3, and Nos. 1, 2 3, and 4, of vol. 4, and No. 2, of vol. 5, and Nos. 2, 3, and 4, of vol. 6, and Nos. 2 and 3, of vol. 7.

The No. containing Gen. Dearborn's letter on woad, we have had ; but our clothier having cultivated this plant the last season with success, is now in quest of information how to manufacture and prepare it for use. He has respect to a treatise to which the General's letter refers.

As to experiments and improvements to communicate to the Agricultural Society, be assured we feel much indebted to you, and also to Esq. John L. Sullivan, for your liberality, and should be willing to communicate any thing in our power, that would be beneficial to mankind ; but as our minds are not so intent on natural and external things as on an interest in Christ, and as our agricultural pursuits and improvements are so small and simple, we consider ourselves inadequate to say much on that subject.

However, there are two or three small improvements we shall mention for your consideration, having been under our experience for some years ; and which we find to be beneficial to us, and from which, if you and others can derive the same benefit, we shall feel ourselves amply rewarded for giving the following hints.

1st. The process in making and refining cider in order to have it good and wholesome, is so simple, (though important) that many people entirely overlook it, supposing the mystery so deep, as to be entirely out of their reach : and others, perhaps, tenacious of the customs of their forefathers, shut their eyes and ears to any improvement, however propitious to their interest and comfort ; such will probably be contented to smack over their ill-flavoured and unwholesome beverage through life.

Now, friend Prince, if we should explain what we know respecting the management of cider, some people would laugh, and say they did that and a great deal more : and I suspect they do, and add many more ingredients, such as water, pomace, and rotten fruit ; and perhaps something more from fowls, beasts, and vermin, none of which makes the cider any better.

We shall not hesitate to give it as our decided opinion, that cool climates are much more favourable to cider than warm. However, what greatly contributes to the goodness and delicacy of cider, is the cleanliness of the casks which contain it. In fine, all utensils used in making cider, should be kept clean, and not suffered to get sour through the whole process ; even the press should be frequently rinsed down, during the time of making cider, to prevent sourness or a change in the cider.

To clean casks which have been used for cider, we take them from the cellar as soon as convenient after the cider is out, (reserving the lees for stilling) and rinse each clean, first with a pailfull of scalding water, then with cold, leaving the casks with the bungs down for a day or two, or till dry. Then we bung them tight, and return them to the cellar, or some convenient place (not too dry) for their reception. Previous to filling these casks with cider the ensuing season, we scald and rinse them again, as above. Foul musty casks ought to be committed to the fire. Hogsheads or large casks are the best for cider, especially those that have recently been used for rum or other spirit.

Apples that drop early we make into cider for stilling, it being unfit for table use ; the spirit of which, together with that of the lees, we return back to our store cider at the time of racking, which is generally about the first of January. Cider made of apples before they are fully ripe, we deem unfit for drinking : and even when ripe, if they are made into cider during warm weather so as to produce a sudden and rapid fermentation, the cider will unavoidably be hard and un-

pleasant. The fact is, the slower cider is in fermenting, the better it will be at any age : consequently the later in the season it is made, and the cooler the weather (if the business can be conveniently performed) the better ; especially for long keeping. However, this is a cold work for the fingers, unless pressed in a rack, which is the best method.

About the first of November we think a suitable season, if the weather be dry, to gather and put under cover apples for store cider. After lying in this situation till mellow, (not rotten) we commence grinding.

Doubtless good cider for early use, or perhaps for the first year's drinking, may be made previous to this time ; but cool serene weather should be chosen for the business.

The grinding trough should be spacious enough to contain a cheese, in order to admit the pomace (if the weather be cool) to lie over one night before pressing. This method contributes much, both to the colour and quantity of the cider.

In the morning press it out gradually, and put it up into the casks through straw, or rather a coarse sieve, fitted and placed within the tunnel : after which, we convey it immediately to a cool cellar, leaving out the bungs till the fermentation chiefly subsides, which may be ascertained by the froth settling back at the bung-hole. We then drive in the bungs tight, leaving a small spigot vent a while longer, if need require, to check the pressure, which must finally be made air tight.

About the first of January, we rack it off free from the lees into clean casks. Those that have been recently used for spirit are to be preferred. But otherwise ; having drawn off one cask, we turn out the lees, scald and rinse the cask as above ; add three or four pails full of cider ; then burn in the cask, a match of brimstone attached by a hook, to the end of a large wire fixed in the small end of a long tapering bung fitting any hole. When the match is burnt out, take off the remnant ; apply the bung again, and shake the cask in order

to impregnate the cider with the fume. Add more cider and burn another match. Then add from one to three gallons of spirit (obtained from the lees as above) to one hogshad; fill up the cask with cider, and bung it down air tight, and let it remain till it becomes of mature age.

Cider managed in this way will keep pleasant for years. We would not be understood to suggest a notion, that good cider cannot be obtained without the addition of spirit; especially for immediate use, or the first year's drinking; but the contrary. Yet spirit will give it a new and vigorous body, and insure its preservation.

To make matches for stumming casks, take strips of linen or cotton rags about 1 1-2 inch wide, and 3 or 4 inches long, dip the end of each in melted brimstone, to the extent of one inch.

2d. Another improvement, though very simple, we shall recommend, as having been highly beneficial to us for some years; that is, the preservation of vines, and other plants, from the depredations of bugs and insects, by means of wooden boxes. These boxes are made of thin boards, about one foot square, and 4 or 5 inches deep; covered with thin, loose-woven cloth, either of cotton, hemp, or linen, quite as thin as a coarse meal sieve. The cloth should be oiled over with linseed oil. The boxes are placed and kept over the hills till the vines become of sufficient growth and strength to bid defiance to the depredations of those devouring insects. This is the cheapest, best, and finally the only effectual method that we have ever found to preserve our vines from destruction.

These boxes with careful usage will probably last for the term of 15 or 20 years. They should be put under cover when they are not in use; and it would be well to repeat the oiling of the cloth tops once in 4 or 5 years with train oil.

3d. Another thing having been under our experience for many years, we find to be very beneficial to us in our joint situation; that is, it saves considerable manual strength and

hard labour, viz. the taking off hay from the load and placing it on the mow by a horse, with what we call grabs or hooks, fixed to a tackle, which is suspended to the ridge pole or rafter of the barn, nearly over the centre of the mow ; and to the rope of which (passing under a truck) a horse is hitched and ridden by a small boy directly forward through the yard. We frequently take off a ton of hay at four or five draughts, each of which being suspended by a rope, is, by two hands easily swung, as the rope slacks, to any part of the mow. The rope is held by the loadman, while the horse turns about and commences his trip towards the load. However, we could not recommend this method to farmers who cut hay on a small scale, or where but few hands are employed.

At any rate, we should rather prefer the location of a barn (when practicable) on the side of an hill, so as to facilitate a passage over a floor across the beams. This method we have proved, and find it an excellent plan. I presume one man in this situation, will get off more hay in the same time, and with less fatigue, than four would in the ordinary way.

4th. And lastly ; we have a machine (moved by water) for thrashing and cleaning grain ; which we can, with confidence, recommend to great farmers. This machine will thrash and winnow unusually clean, at least 100 bushels per day : it has done 16 bushels per hour. Thus it not only saves much time and hard labour, but also enables us to secure our grain from vermin and other waste, immediately after harvesting. Although (as we understand) some sagacious speculator has copied a model, or nearly a model, from our machine, and obtained a patent for the same, as having been his own invention ; yet we think we are fully able to prove our right of claim to the invention, it being the result of our own mental researches.

We never saw nor heard of any thing similar, previous to our building the above mentioned machine for our own use, in the summer of the year 1819 ; to the benefit of which, we make you and every other man freely welcome, having never in-

tended to make other people tributary to our avarice, by securing a patent for this, or any thing else, that might be of service to mankind. However, as we have not room here to give a plan, nor even a minute description of this machine, you will please to call and see it the first opportunity, and judge for yourself of its utility.

Although water may justly be considered by far the best power of motion, yet I presume this machine may be so constructed as to operate by horses. The cost, exclusive of a building to contain the grain, is probably about \$100.

I am, with due respect, your friend,

FRANCIS WANKLEY.

P. S. One of your former numbers speaks much in favour of florin grass ; if you think it to be profitable, we should like to procure some means for propagating it ; also a small paper of Mangel Wurtzel seed.



REFLECTIONS ON THE IMPORTANCE OF STEEPING SEEDS IN
VARIOUS FRUCTIFYING LIQUIDS, WHICH HAS BEEN THE
SUBJECT OF MUCH DISCUSSION.

[Editors.]

MEN have been always prone to devise, and adopt some ready and mysterious way of hastening perfection in *all* the arts. There is no one of them, that has not at times boasted its philosopher's stone—some expeditious mode of dispensing with what Providence has made indispensable to the attainment of all good in this world, viz. constant, unremitted, intelligent exertion. However futile and ridiculous these endeavours may have been in *other* arts and sciences, (and they are in this age of true philosophy regarded, as they ought always to have been, as the chimeras of enthusiasts,) in the art or science of agriculture, they are eminently

preposterous and absurd. There is in this art, no easy and compendious road to success. The faithful division of the soil by repeated and incessant labour, the application of proper manures or composts to enrich it; to impart to each particular species of soil, the elements in which it is found to be deficient—these are the great secrets, and the only secrets, of successful cultivation. While we were young proficients in this science, we read with wonder, not unmixed with incredulity, the surprising effects of steeping seeds in various liquors, impregnated with substances, which a vain philosophy always more satisfied with novelty than with truth, had decided to be the best food for plants. As we have grown older, we have found, that the most rational physiologists are not yet agreed as to what is the proper food of plants. They have contented themselves with simple facts, that some plants prefer one species of soil or manure, and others prefer a very different one. And they have endeavoured, as far as possible, to give to each plant the kind of soil and manure in which, and by which, it is found to flourish best.

The supposition, that so small a seed as that of wheat, or Indian corn can imbibe from being steeped for twenty-four hours in any liquor, however fructifying or favourable, a degree of force, which can enable it to withstand the effects of an uncongenial soil, or to produce more abundantly even in a congenial one, savours too strongly of mystery to be readily adopted by any rational mind. We are not disposed to deny any influence whatever to such experiments; but we think it must be very limited, and that it has been grossly over estimated. It would be indeed strange, if there were not some quackery in this art, as in all others, and while we have at least one hundred medicines, which will cure every disease to which man is subject, (though no visible diminution of disease has been as yet produced by any or all of them,) agriculture should not also have its universal panacea, competent to eradicate all disease, and to produce the highest

possible state of vegetable health. It is with no small pleasure, that we are able to state, that Evelyn, the Bacon of philosophical agriculture, had a thorough disbelief in this short hand mode of producing luxuriant and prolific vegetation. In speaking of the soils in which forest trees flourish, he gives this sly rebuke to the believers in fructifying steeps. "Rather, therefore, we would take notice how many great wits and ingenious persons, who have leisure and faculty, are in pain for the improvement of their heaths and barren hills, cold and starving places, which causes them to be despaired of and neglected, whilst they flatter *their hopes* and *vain expectations* with *fructifying liquors*; *chymical menstruums*, and *such vast conceptions*—at the same time, that *one may shew them* as heathy and hopeless grounds and barren hills *as any in England*, that do now bear, or lately have borne, woods, groves, and copses which yield the owner more wealth than the richest and most opulent wheat lands."

There is a strong vein of sarcasm and truth in these remarks, and they had their effect in covering England with valuable and beautiful forests and groves, as we now find it. It may be of some practical use to add the experience of the writer of this article. He planted *some hills* which consisted entirely of sand or gravel, and which would not furnish vegetables for the support of a single cow for six weeks in a year. It was represented to him by his neighbours that trees would not grow upon them. It seemed, indeed, to be a hopeless undertaking. Still he persevered, and the wood now growing at the end of fifteen years would pay, if cut down and sold to the bakers, for a sum equal to the price of the land; he believes, to double that price. But the most important remarks on this subject were made in a note by the editor of Evelyn's *Sylva*, Alexander Hunter, the author of the "Georgical Essays," a man of rare merit, philanthropy, and good sense. He goes at large into the question of the value and importance of *steeping seeds*, placing the question, as we believe, on its true and rational ground.

“The steeping of seeds,” he remarks, “in prolifick liquors, is not of modern invention. The Romans, who were good husbandmen, have left us several receipts for steeping grain, in order to increase the powers of vegetation. In England, France, Italy, and in all countries where agriculture is attended to, we see a variety of liquors recommended for the same purpose. Good nourishment has ever been observed to add strength and vigour to all vegetables. Hence it was natural to suppose, that by filling the vessels of the grain with nourishing liquors, the germ with its roots would be invigorated. *How far this is founded on just principles remains now to be examined.* For my part,” says Mr. Hunter, “I am not an advocate for steeps. All my experiments demonstrate that they have no inherent virtue. I have more than once sown the same seed, steeped, and unsteeped, and though all other circumstances were minutely alike, yet I could never observe the least difference in the growth of the crops. *I confess that when the light seeds are skimmed off, as in the operation of brining, (or steeping in water saturated with salt, which is heavier than common water) the crop will be improved and diseases prevented,* but these advantages proceed from the goodness of the grain sown, and not from any *prolifick virtue* of the steep. I am happy in not being singular in my objection to steeps. Many philosophical farmers have been induced to quit their prejudices, and are now convinced, from their own trials, that there is no dependence on prolifick liquors, though ever so well recommended. Some people have been hardy enough to persuade themselves, that the *tillering* of wheat, (its disposition to spread and send up many shoots from a single kernel) may be so much increased by invigorating the grain (by steeps) that only one half of the seed will be required. Duhamel, one of the most accurate of experimental husbandmen, and a most excellent philosopher, speaks in the strongest terms against the practice of steeping, *so far as it supposes an impregnation of vegetative particles.* I shall not

here repeat his experiments. I shall only observe, that they are such as any farmer may make ; they are *plain and conclusive*. Good seed, when sown upon land in good tilth, will always produce a plentiful crop. The best grain impregnated to the full with the most approved steep and sown upon land indifferently prepared, will forever disappoint the hopes of the farmer. I do not presume to condemn the practice in positive terms because my own experiments are against it. Other experiments may be opposed to mine. I shall therefore, rest the whole upon a description of what happens to grain, after it has been committed to the earth. The subject is curious, and the discussion of it not very difficult. A grain of wheat contains within two capsules, a considerable share of flour, which, when melted down by the watery juices of the earth, constitutes the nourishment of the tender plant, *until its roots* are grown sufficiently large to absorb *their own food*. Here is evidently a store-house of nutriment, and of course the plumpest grains are the most eligible for seed. From repeated experiments, I am convinced that the plumpest seeds are always preferable to the small ones. I have sprouted every kind of grain in a variety of steeps, and *can assure the farmer* that the root and germ never appeared so vigorous as when sprouted in simple *elementary water*—an argument that the seed requires no assistance. The *same steep* when applied in *quantity* to the soil will undoubtedly invigorate the roots, and nourish the plant ; but in that case it operates like other manures, and loses the idea of a steep. As nitre, and sea-salt, and lime, are generally added to steeps, I have *constantly observed* that their application rendered the radicle and germ sickly and yellow—a plain proof, that they were unnaturally used at that season. Did the farina of the seed need any additional particles, it might be supposed that broth made of the flesh of animals would be most agreeable. [Probably founded on the fact that animal manure is the most powerful. *Editors.*]

“To be satisfied of that, I sprouted some grains in beef

broth, and an equal number in simple water. They were afterwards sown, but I could perceive no difference in the crop. As no invigorating, or fructifying liquor had ever stood the test of fair experiment, we may venture to lay it down as an *established truth*, that plump seed, clear of weeds, and land well prepared to receive it, will seldom disappoint the hopes of the farmer."

We are not prepared to express a decided opinion in favour of Mr. Hunter's suggestions, though they derive great weight from the support of two such men as Duhamel and Evelyn.

There is one consideration which Mr. Hunter has certainly not pressed as far as he might have done. The *bulk of the seed* is so extremely small compared with the roots and top of any plant, (Indian corn, for example, whose root and tops probably contain from 200 to 500 times as much matter as the seed,) that it is incredible, that any productive virtue (be it ever so great) could materially affect the growth of a plant, which daily requires so much food. We thought the article ingenious, and we give it the preference, because it is in opposition to long a established opinion, founded in mystery.

ON RAISING THE OAK FROM THE ACORN, AND THE BEST
MODE OF DOING IT.

[By the Editors.]

IT is very extraordinary, that, notwithstanding the Massachusetts Agricultural Society has for thirty years offered great premiums for the culture of the oak in plantations, and especially since the legislature enjoined it upon the several agricultural societies throughout the state to offer premiums for the raising of forest trees, but two claims should have been made. We can only account for it on one of the following grounds, either that the premium has not attracted the atten-

tion of our farmers, or that they have not sufficient spirit and enterprise, or that they are averse from any new culture, however important and reasonable. We shall take the article of White Oaks, which were selected by our society, as being the most valuable timber of the Northern States.

The premium offered in 1822, for one acre planted with white oaks, and found to be in the best state in September 1823, (that is at eighteen months old,) was 100 dollars per acre. The average price of good land throughout the state does not exceed twenty dollars per acre. The expense of raising seedlings of eighteen months old would not exceed twenty dollars more, if the following account be correct; indeed we believe it would not exceed ten dollars, as we can see no reason why the expense of planting an acre of acorns should exceed the expense of planting an acre of corn. There would be left then of clear profit to the raiser of an acre of oaks a profit of sixty dollars at least for two years culture, and as is remarked in the following article, a crop of grain may be raised at the same time sufficient to pay the whole expense. Have we no man in the state who is spirited enough to set the example, and carry away the honour and profit? The acre of oaks will *afterwards be his*, and there is no mode in which he could employ his land to so great advantage. It will not surely be said, that our farmers *cannot spare any of their land*, when our great error consists in holding more than we can, or do cultivate *well*.

On the mode of raising the oak "from Hunter's Notes on Evelyn's Sylva."

"HAVING the ground properly prepared, (by breaking it up and reducing it to a fine tilth, either by potatoes or repeated ploughings) and having a sufficient quantity of acorns, all gathered from the most vigorous, healthy, and thriving trees, proceed to the setting them in the following manner. In the month of February or March [but in this country we say *from experience*, the months of November or

December if the latter month be open) let lines be drawn across the ground for the rows, at the distance of four feet from each other; but if this be thought too great an interval, the rows may be made three feet, in which case the acorns must be put down at a greater distance from each other. Then having sticks properly rounded to make the holes, (a common dibble) plant the acorns in the rows at ten inches asunder. Let them be put down about two inches below the surface, and see that the earth be properly closed upon them to prevent mice or crows from injuring the seed. In some places it is customary to sow the acorns after the plough in furrows, but where the ground happens to be stiff, great care should be taken not to cover the seed with too thick a furrow.

“The first year after planting the acorns, the weeds must be kept down by hoeing and hand-weeding, and this must be done early in the spring before the weeds get so strong as to hide the tender plants, which would occasion many of them to be destroyed in cleaning. It is also the cheapest, as well as neatest husbandry, to take weeds down, before they grow too large; for though the ground may require an additional hoeing in spring, yet the weeds being hoed down when young, a man may hoe over a great quantity of ground in a day. Weeds cut in their tender state immediately die. Whereas, when they are old and strong, they frequently grow again, especially if rain falls soon after, they perfect their seeds in a short time, and thereby injure the whole plantation.

“The second year of their growth the common plough may be made use of, to cultivate and keep the ground clean, [or potatoes might be raised between the rows if proper care be taken not to trample on the plants. Editors.]

As these acorns sometimes fail, the author proposes a nursery in the same field to supply the deficiencies.

“Having then given directions for the raising of wood, I proceed,” says the author, “to their future management.

And first, the rows being four feet asunder, and the plants two feet apart in the rows, they may stand in this manner for twelve or fourteen years, when every second plant may be taken out and sold for hoops or poles. After every second plant is taken away, let the roots of those taken away be grabbed up to give the remaining plants more room freely to extend their roots. The plants being now four feet apart each way, they will require no more thinning for seven or eight years, that is, till they are twenty years old, when the healthiest and most thriving trees must be marked to stand for timber, and the others cut down for poles, and their roots left to produce future underwood.

“The oak will grow and thrive on almost any soil, if properly planted, though it cannot be supposed that their success will be equal in all places. A rich, deep, loamy soil is what oaks most delight in, though they will grow exceedingly well in clays of all kinds, and in *sandy soils, in which last, the finest grained timber is produced.*”

The author then proceeds to inquire, which of the different modes of raising oaks produces the best timber, from the acorn, the seed-bed, or the nursery. Mr. Evelyn decides in favour of *planting the acorn*, and Mr. Hunter adds, that whoever will look at the woods which were *sown*, and compare them with those which were *planted from nurseries*, will not hesitate a moment to declare in favour of Evelyn’s opinion.

What are the obstacles to our following this excellent example of the great farmers of England, in the age, in which our ancestors emigrated? Is it because we are too impatient, and unwilling to await so tardy a return? Yet there are constant pleasures in the annual growth of our forests, they seem to be the work of our own hands, at least of our own providence and care; they are subject to fewer hazards, and their profit is certainly greater than that of any other employment of capital on land, or is this aversion to planting the effect of an hereditary prejudice against trees?

Our ancestors found *their extirpation*, their *greatest labour* and do we continue to feel their prejudice, when woodland is far the most valuable, and must constantly increase in its comparative value?

PROFESSOR COGSWELL'S DONATION OF A VALUABLE HERBARIUM TO THE VISITORS OF THE MASSACHUSETTS PROFESSORSHIP OF NATURAL HISTORY.

IT is not, perhaps, generally known, that the Trustees of the Massachusetts Society for *promoting agriculture*, are *also*, with the President of the American Academy of Arts and Sciences, the President of Harvard University, and the President of the Massachusetts Medical Society, the Visitors of the Massachusetts Professorship of Natural History, and, of course, of the Botanick Garden.

Every thing interesting to *that establishment* ought, therefore, to find a conspicuous place in *this journal*.

It is not necessary at this day, to urge the importance of botanical knowledge, and its necessary connexion with agriculture. The liberal exertions of the government of the United States under the administrations of Jefferson, Madison, and Monroe, to promote the knowledge of the vegetable productions of the extensive countries over which we claim jurisdiction; their employment of scientifick men to explore these regions with views to the promotion of the science of natural history; the honourable progress made in that science, which was scarcely known in the United States 40 years since, by the successive labours of Cutler, Muhlenberg, Peck, Cleaveland, Elliot, Silliman, Say, Bigelow, Nuttall, Torrey, and many others, render any remarks in its favour unnecessary and inexpedient.

We may, however, assume some praise for Massachusetts, for its exertions, both public and private, in founding a bo-

tanick school ; and what is a rare praise in the United States, in *preserving* what it *had* founded. The Botanick Garden at Cambridge, is the only surviving one in the United States. The opulent and extensive and liberal State of New York, after paying \$80,000 for Dr. Hosack's garden, is said to have suffered it to pass into decay, while Massachusetts, without any extensive grant, has by a moderate annual encouragement, wisely fostered an institution nobly endowed by private benefactions. We trust the rulers of the State, seeing the interest taken in this science, will now *do more* ; and as a State of the first importance, place the garden at Cambridge, on a footing at least with that at Liverpool, created and sustained by a single city of Great-Britain.

Professor Cogswell is entitled to great praise for the devotion of his time, his thoughts, and his property, while abroad, to the acquisition of the means of advancing the science of natural history in his native country. Had he *retained* for his own use, his valuable collections, he would still have been a benefactor ; for every citizen who collects a library or a cabinet of minerals, or a herbarium, renders essential services to his country, but when he presents these fruits of his zeal and exertions to the publick, they are still more his debtors, and the least they can do, is publicly to acknowledge their sense of obligation. In this case, I personally know, that the object of our notice would gladly have been spared this public tribute ; but private delicacy must yield to public duty, and superior public interests.

J. L.

Cambridge, April 12, 1823.

Dear Sir,—When I was in Switzerland, I procured a large Herbarium of the plants of that country, which I look upon as too valuable to be shut up in the private cabinet of an individual, especially of an individual, whose other occupations afford him but little time for the study of Botany. I have determined, therefore, to present it to the Massachusetts Professorship of Natural History, believing that it will there be

in better hands than in any other in the country. I must beg you to offer it to the Visitors of the Professorship in my name. It contains 3172 specimens of dried plants of central Europe, all of which, I believe, are in perfect preservation; of these, 555 are Lichens still attached to the substances on which they grew. The Herbarium is put up in volumes like that, which accompanies this note, of which there are twelve, beside a distinct one for the Cereales. The Lichens are in a cabinet by themselves, in a different form. The plants were collected partly by myself, and partly by Mr. Sevinge, of Bern, who pressed and prepared the whole. This gentleman is constantly employed by Mr. De Candolle, for this purpose, and consequently must be capable and accurate. The Herbarium was examined by Mr. De Candolle, and many of the plants verified by him; he considered it very perfect of its kind. Dr. Bigelow examined it also, and was of the same opinion; and so was Mr. Nuttall, as far as he could judge on a slight inspection. It is arranged according to the natural order, and the catalogue is made to correspond. I send a volume of the Herbarium and the catalogue, that the gentlemen may see the state in which it is, and its extent. Should the Board of Visitors do me the honor to accept this Herbarium, you will please inform me into whose hands I shall deliver it.

With great respect, I am my dear sir,

Your friend and servant,

JOS. G. COGSWELL.

BENJ. GUILD, Esq. *Secretary of the Board of Visitors of Mass. Prof. Nat. Hist.*

The Visitors accepted this donation, and presented to Mr. Cogswell their thanks in behalf of the publick.

ON MILDEW.

THERE is no evil to which the farmer of the Northern States is subject more injurious than mildew—none, which he is more interested in seeing overcome. It is that principally which prevents his raising his own wheat, and as the first step, towards discovering a remedy, is the ascertainment of the cause of the evil, and its nature, the farmer is of course interested in learning what mildew proceeds from, and what it is. Much mystery has hung over this question, and opposite opinions have been entertained respecting it, but we trust that philosophical, and indeed all reading farmers will be pleased by perusing the following article from the pen of the well known, and respected Mr. Knight, of whom we have spoken before.

On the prevention of Mildew in particular cases. By Thomas Andrew Knight, Esq. F. R. S. &c. &c. President of the London Horticultural Society, read in 1813 and printed in 1813.

“ The little pamphlet upon the rust, or mildew of wheat, for which the publick are indebted to the patriotick exertions of the venerable president of the Royal Society (the late Sir Joseph Banks) affords much evidence in proof, that this disease originates in a minute species of parasitical fungus, which is propagated, like other plants, by seeds, and the evidence adduced would, I think, be sufficient to remove every doubt on the subject, were the means ascertained, by which the seeds of this species of fungus are conveyed from the wheat plants of one season to those of the succeeding year. This, however, has not yet been done; and therefore *some persons* still retain an opinion that the *Mildew* of wheat consists only of preter-natural processes, which spring from a *diseased action of the power of life in the plants themselves.*

“ An hypothesis, which differs little from this, has been pub-

lished in the present year* respecting the dry rot, or *Boletus lacrymans*, of Timber. It is contended that the different kinds of fungus, which appear upon decaying timber of different species, are produced by the remaining powers of life in the sap of the unseasoned wood ; and that the same kind of living organizable matter, which, whilst its powers remained perfect, would have generated an oak branch, will, when debilitated give existence to a species of fungus. But if this power exists, and becomes capable, during its rapid declension of deviating so widely from its original mode of action, the species of fungus it would produce, might be expected to become successively more feeble and diminutive : whereas the most robust and gigantic of the whole genus, the *Boletus squamosus* springs from wood, when that is in the *last* stage of decay, and the best known, and the most valuable species to mankind, of this tribe of plants, the common mushroom [from which catchup is made, and which in Europe is a luxury of the table] appears as obviously to spring from horse dung under favourable circumstances, as any species of the same tribe appears to spring from decomposing wood, without the presence of seeds.† Yet it can scarcely be contended, that any vital power, capable of arranging the delicate organization of a mushroom, can exist in *horse dung* ; and the admission of such power would surely lead to the most extravagant conclusions. For if a mass of horse dung can generate a mushroom, it can scarcely be denied that a mass of animal matter, an old cheese, may generate a *mite*, and if the organs of a mite can thus be formed, there could be little difficulty in believing that a larger mass of decomposing matter would generate an *Elephant* or a *man*.

“ The hypothesis, therefore, which supposes the various

* Quarterly Review.

† Mr. Knight refers here to the small and large mushroom, which are found growing out of decaying timber, and are known by botanists by the names of *Boletus lacrymans*, and *Boletus squamosus*. All persons of any observation must have perceived these mushrooms on decaying timber. *Editors*.

species of fungus to spring from seeds, appears to me much the less objectionable; and, if the minute bodies, which are supposed to be the seeds, be really such, it will not be difficult to shew that these are sufficiently numerous to account, to a great extent for the ubiquity [the universal presence] of the plants they are supposed to produce, particularly as such apparent seeds, owing to their excessive lightness, are capable of being dispersed every where by winds.

“A few years ago I raised some mushrooms under glass with the intention of collecting, and subsequently raising from the seeds they might produce; and I then endeavoured to ascertain the number which would be afforded by a single fructification; for a mushroom appears to be nothing more than a fructification of the plant, though it is generally spoken of as the plant itself. I placed thin plates of talc, [isinglas vulgarly called with us] under a very large mushroom, at the period when the minute globular bodies which are supposed to be the seeds, first began to be disengaged from its gills; and I endeavoured to count the number which fell during each successive hour, within the narrow field of a very powerful lens. The labour to my eyes was, however, so severe, that I was unable to count with any considerable degree of accuracy; but the number which fell from a *single* mushroom, within the succeeding ninety-six hours, exceeded upon the lowest calculation that I could make, *two hundred and fifty millions*. I endeavoured to raise mushrooms from these seeds, but I failed to obtain any decisive results; for though I readily procured mushroom spawn by mixing such seeds with unfermented horse dung, I also obtained them in equal abundance in some instances where I had not introduced any seeds.

“Immense as the number of seeds produced by a single mushroom appears, it probably is not much greater than that which a single plant of mildewed wheat would afford; and, according to this calculation, a single acre of mildewed wheat would afford seeds sufficient to communicate disease to every

acre of wheat in the British empire, under circumstances favourable to the growth of the fungus; [Mr. Knight proceeds throughout on the belief of the doctrine advanced by Sir Joseph Banks, that the mildew is a plant of the class which botanists call fungus] and I have never seen a *single* acre of wheat since the publication of Sir Joseph Banks's pamphlet so free from *mildew*, but that it would have afforded seeds enough amply to supply the adjoining hundred acres. There is also reason to believe that the barberry tree (or shrub) communicates this disease to wheat, and I have also observed a similar, apparent parasitical plant on the couch grass, in the hedges of corn fields.*

"Neither the *mildew* of *wheat* nor any other kind, can however, I think, be communicated directly from the leaves and stems of one plant to those of another; very numerous attempts made by myself to succeed in experiments of this kind, having, I believe, proved abortive; though I once fancied that I had succeeded in two or three instances. I am, therefore, much inclined to believe that the parasitical fungus, which occasions every disease of this kind, enters the plant in the first instance *by the roots*, though it may probably be transferred by the graft, and probably by the bud, from one *fruit tree* to another; and if the seeds be capable like those of many other plants, of remaining sound a considerable time beneath the soil, or in other situations. till circumstances, which are favourable to their growth, occur, the abundant appearances of mildew, or mushrooms, may

* We witnessed three years since the most unequivocal proofs of the effects of the barberry on surrounding plants of winter rye. Several days before the mildew was seen on *any other* parts of the field, it appeared in extensive and destructive influence around a barberry bush. We called the attention of Dr. Bigelow to the fact, which could not be questioned. There was, however, some doubts on his mind whether the fungus on one and the other was identically the same. But the fact cannot be questioned, that it first appeared in the vicinity of the barberry, and thence gradually and rapidly spread in diverging lines over the whole field. The barberry is constantly affected with this disease, and at an early season before it blossoms. *Editors.*

be accounted for without supposing them to be generated wholly by the bodies from which they spring.

“ I shall not trespass on the time of the Horticultural Society by dwelling longer upon the primary causes of the various diseases, which are comprehended under the name of mildew; but shall proceed to the immediate object of the present memoir, which is to point out the means by which the injurious effects of the common white mildew may be in particular cases, prevented.

“ The secondary, and immediate causes of this disease have long appeared to me to be the *want* of a sufficient supply of moisture from the soil, with *excess* of humidity in the air, particularly if the plants be exposed to a temperature below that to which they have been accustomed. If damp and cold weather in July succeed that which is warm and bright, without sufficient rain to moisten the ground to some depth, the wheat crop is generally injured by mildew. I suspect, that in such cases, an injurious absorption of moisture by the leaves and stems of the wheat plants takes place; and I have proved, that under similar circumstance much water will be absorbed by the leaves of trees, and carried *downwards through their alburnous substance*; though it is certainly through *this substance* that the sap *rises* under other circumstances. If a branch be taken from a tree when its leaves are mature, and *one leaf* be kept constantly wet, that leaf will absorb moisture, and supply another leaf below it upon the branch, even though all communication between them through the *bark* be intersected; and if a similar absorption takes places in the straws of wheat or the stems of other plants, and a retrograde motion of the fluids be produced. I conceive that the ascent of the true sap, or organizable matter, into the seed vessels, must be retarded, and that it may become the food of the parasitical plants, which then only may grow luxuriant and injurious.

“ This view of the subject, whether true or false, led me to the following method of cultivating the pea, late in au-

tumn, by which my table has been as abundantly supplied during the months of September and October as in June or July, and my plants have been as nearly free from *mildew*.

[To enable those who have not attempted to cultivate late pease to understand Mr. Knight, we would remark, that both in Europe and America, the pea sowed for an autumnal crop is generally, we might say, almost universally subject to mildew, so that we cannot enjoy this delicious green vegetable, for more than two months in the year.]

“The ground is dug in the usual way, and the spaces which will be occupied by the future rows are well soaked with water; the mould upon each side is then collected so as to form ridges seven or eight inches above the previous level of the ground, and then are well watered. After which, the seeds are sowed in single rows along the tops of the ridges. The plants very soon appear above the surface, and grow with much vigour owing to the great depth of the soil and abundant moisture. Water is given rather profusely once a week, or nine days, even if the weather proves showery. Under this mode of management the plants will remain perfectly green and luxuriant till the young blossoms and the seed vessels are destroyed by frost, and their produce will retain its proper flavour which is always taken away by mildew. The pea which I have planted for autumnal crops is a very large kind, of which the seeds are much shrivelled, and which grows very high. It is now very common in the shops of London, and my name has been, I believe, generally attached to it. [It is well known by us by the same name, and is an excellent late variety.] I prefer this variety, because it is more sweet than any other, and retains its flavour better late in autumn. It is my custom to sow some of it every ten days, and I rarely ever fail of having my table supplied till the end of October.

“The mildew of the peach and other fruit trees probably originates in the same causes as the mildew of the pea, and may be prevented by similar means. When the roots which penetrate most deeply into the soil, and are consequently best adapted to supply the tree in summer with moisture, are destroyed by a noxious subsoil, or by excess of moisture during winter, I have observed the mildew upon many varieties of the peach to become a very formidable enemy. Where, on the contrary, a deep and fertile loam permits the roots to extend to their proper depth; and where the situation is not low as to be much infested with fogs, I have found little of this disease; and in a forcing house (for prematurely ripening fruit) I have found it equally easy by appropriate management to *introduce* or *prevent* the appearance of it. When I have kept the mould very dry, and the air in the house damp and unchanged, the plants have soon become mildewed; but when the mould has been regularly, and rather abundantly watered, not a vestige of the disease has appeared.

“It must be confessed, that it is not easy to account, at first view, for the appearance of this disease under some of the preceding and various other circumstances, if it be produced by a parasitical plant which propagates by seeds, but all we ever see of mildew is simply its fructification. The plant itself, if it be one, is wholly concealed from our senses: it may consequently be transferred from one plant to another by the graft or bud, and never become visible, till the health of the tree be effected by other causes.

“I could state some cases which are very favourable to this opinion, for this disease appears readily to be communicated by a graft to another tree, when that grows in the same soil, and in similar external circumstances.

“The different species of minute insects, which feed upon the bodies of our domestic cattle are scarcely ever seen, and are never injurious so long as the larger animals retain their health and vigour; but when these become reduced by fa-

mine, or disease, the insects multiply with enormous rapidity, and though at first, they are only symptomatic of disease, they are ultimately become the chief and primary cause of its continuance. The reciprocal operation of the larger plant (on which the mildew feeds) and the mildew upon each other may possibly be somewhat similar.

“I offer the preceding opinions merely as conjectures; the hypothesis I have chosen has led me to the successful treatment of the disease in particular cases; and it may in the same way lead to others, and I therefore venture to submit it to the Horticultural Society *without being very confident of its truth*. If however the countless millions of apparently organized bodies, which are generated by the different species of fungus, *be not seeds*, nature appears to wander widely from its ordinary path; for amidst all its boundless profusion and exuberance, it does not ever, in other cases, appear to labour wholly in vain.”

So far Mr. Knight instructs, or at least attempts to instruct us. No person can read his remarks without admiring his philosophical caution and modesty, and yet it is obvious, that he concurs with his predecessor, Sir Joseph Banks, in considering mildew as a plant—an organized being endued with vegetable life. How far the admitted discovery of this fact may eventually lead to the extinction, or at least the diminution of this vegetable scourge, time only can decide, but we cannot think our readers will believe their time ill spent in perusing these ingenious suggestions.

THE CAROLINA POTATO, OR SWEET POTATO.

THIS plant is not a potato, though there is a vulgar opinion, that the common potato transplanted to southern regions

becomes sweet, and that the sweet potato on being carried to northern climes degenerates into the common potato. The common potato is what the botanists have named a *Solanum*. It is not a running plant. Its native country is probably the high lands of South America—a cold region. It delights in cold seasons, and a moist soil, and it is a fact, that it is drier and more mealy, when raised in such soils, than in dry ones. The best potatoes known are raised in the wet, flat and almost overflowed grounds of Lancashire in England; and in Ireland, so famous for its moisture and verdure, as to have received the appellation of the Emerald Isle. It flourishes admirably in the fogs of Nova Scotia and the lower parts of the state of Maine. The sweet potato has no title to be called the Carolina potato. It is an exotic, or foreign plant with them. It is a native of tropical regions; has been gradually introduced northerly, like the Lima or Saba, commonly pronounced, Civet bean. The sweet potato is not a *solanum*, but a *convolvulus*; has all the habits of the tribe of the *convolvulus*; it is a running or creeping plant. It never flowers in our country. It is very hardy—is capable of bearing more frost than the common potatoe, but in wet seasons it is watery and less sweet. It may prove my great zeal, and somewhat theoretical turn, to recommend *again* the culture of this vegetable in Massachusetts, but four years experience gives me some right to speak of it *practically*.

I recommend its culture on the following grounds.

First. It will grow and succeed here under ordinary culture.

Secondly. It is very prolific, making as good returns as the common potato.

Thirdly. It is preferred by man, bearing usually a price three times as great with us as the common potato.

Fourthly. It is preferred by all animals of whatever description. Cows and pigs eat it greedily, and even dung-hill fowls will attack and consume it in a raw state.

It will produce about 300 bushels to the acre. I have never failed to raise it with success. The only impediment to its culture is the difficulty of preserving the small tubes or roots; but as soon as it is known that there will be a demand for them, our market will be regularly supplied from New Jersey, where it has been long naturalized. It can be as easily raised, as cabbages. This I undertake to affirm.

J. LOWELL.

I would not be supposed to recommend this article except for the culture of the southern and eastern parts of the State, nor even there, except as a cheap luxury.



NOVA SCOTIA PROVINCIAL AGRICULTURAL SOCIETY.

WE received a pamphlet from John Young, Esq. Secretary of the abovenamed Society, which contains much interesting matter; but from some accident, it reached us so late as not to afford time to make such extracts from it, and to take such notice of it, as we should have been disposed to do. Perhaps there is no district of Europe or America in which a more fervent and zealous spirit in favour of an improved course of agriculture has been awakened, than in Nova Scotia. If we were to attribute this, in a very considerable degree, to the industry, zeal and talents of Mr. Young, we should be borne out, in the opinion, by the general testimony of the inhabitants of that province. The New England Agricultural Journal, a publication of great merit, has made copious extracts from this pamphlet, which renders our unavoidable omission less important. We cannot however omit the introduction of a very singular historical fact stated by the Attorney General of that Province in a very animated speech made at a meeting of the Provincial Agri-

cultural Society. One object of the speaker was to recommend the culture of grain, in preference to raising cattle.

"There cannot be a greater folly (for reasons previously assigned, said the Attorney General.) than rearing so many cattle and neglecting the plough. This has not *always* been the case in Nova Scotia; for he had been lately turning his attention to the ancient records of the Province as preserved in the public offices; with a view to collect any facts illustrative of our agriculture. When the English took possession of this country, there might be 40,000 souls in it, and the *plough* was the support of this population. He found that an embargo was imposed to *prevent the exportation of wheat and pease to the neighbouring state of Massachusetts. Although this may appear strange to some, who have been crying both long and loudly, that we could not raise our own bread*, he could assure them it was a *positive fact*. What was the consequence of this embargo, thus laid on the agricultural produce of Nova Scotia? Why, the *State of Massachusetts takes the alarm, and sets forth a strong remonstrance and complaint, that their supplies were cut off*. On this, his Majesty's council, taking their case into consideration, and willing to give them *all the relief* in their power, grants them a licence of three months for the exportation of wheat and pease. This plain fact, which occurred in 1752, is sufficient evidence to put down all sort of opposition, and shut the mouths of those croakers who have annoyed us so long." The learned gentleman then proceeds to state by what means, the French, who were then the only settlers, were enabled to do this. We are not prepared to say what this does or does not prove, as to the capability of Nova Scotia to raise its own bread stuffs. It is undoubtedly a very strong fact. We cite it, as an *historical curiosity merely*, and it is surely a very great one.

The same learned law officer, at an adjourned meeting made another speech, principally against the culture of *Indian corn* in that Province, and we entirely concur with

him in the impolicy of attempting it. It is a precarious crop in some seasons in some parts of the state of Maine; but the learned speaker was entirely misinformed as to the practice of the United States, when he said—"Corn, (meaning Indian corn) was very fashionable in America; (meaning the United States) because their sterile and burnt uplands were fit for nothing else." Now it is precisely our sterile and burnt uplands upon which judicious farmers *never attempt* to raise Indian corn. To that invaluable plant we generally devote our richest and best soils. On our sterile and burnt uplands we raise rye, and barley occasionally, but never Indian corn unless a man has no other lands on which he can raise it.

The learned gentleman stated another fact which the experience of New England farmers certainly does not support. "Take quantities," he says, "of Indian meal, and of oats, and mix them with water in separate troughs, and you would find that all the pigs would run to the oatmeal and eat it up entirely before they would touch the other." The inferior animals, as well as man, are creatures of habit, and it is possible that the Spanish swine who are fed on acorns and beech-nuts from infancy, would reject Indian corn if thrown down to them, though we doubt it, because instinct is very strong and very correct, and we believe that an English race-horse brought up on oats, would not disdain a manger of Indian corn, but this fact may be relied upon, that *we*, who feed our various domestic animals on every variety of grain, always find them prefer the Indian corn, and fatten best upon it. We had indeed thought, that Baron Humboldt's opinion in favour of Indian corn, supported by that of Arthur Young, had set that question at rest. Countries which are so favoured with heat, and a dry atmosphere, as to be adapted to the culture of Indian corn, can never be persuaded that any other grain is preferable. For Scotland and Nova Scotia, undoubtedly any farinaceous vegetable is better than Indian corn. We should not of course think it necessary to make

any remarks on the suggestion that oatmeal was a *heartier* food for *man* than Indian meal, or the reasons assigned by the Attorney General that "the former was more nutritious, that labourers fed on Indian bread require five or six diets per day, while a sturdy, resolute Scotchman at *any sort of work* would outdo *forty* of them."

Allowing for the natural hyperbolical expressions of a man who is warmed with his subject, we may be permitted to remark, that a Massachusetts farmer, whose bread consists principally of Indian meal, would at mowing, ploughing, hoeing, or any other agricultural labour, except digging peat, compete single handed with any labourer, whom either the highlands, or lowlands of Scotland ever produced. We do not say this in a spirit of rivalry, or with any feelings that are not entirely kind, but merely for the love of correctness. Agriculture, like all other arts and sciences can only be promoted, by precise statements of *facts*. And while necessity, the state of climate and seasons render oatmeal the unavoidable food, and the most economical food in Nova Scotia, as the Iceland moss is in that country, and fish in Lapland, there can be no use in denying the nutritious quality of Indian corn in countries, which are so favoured as to be capable of producing it. *Editors.*

AGRICULTURAL INTELLIGENCE.

JAMES OMBROSI, Esq. consul of the United States at Florence, has sent to the Massachusetts Agricultural Society, through William Little, Esq. of Boston, a few pounds of a grass seed, which he calls *Erba Medica*, and which he says is cut in Tuscany five or six times a year, and is there considered particularly nutritious food for cows or horses. It is chopped up, or in some other way, mixed with hay for cattle. Mr. Ombrosi and Mr. Little will be pleased to

accept the thanks of the society for their attention. The seed appears to us to be that of some species of *Trifolium*, evidently not the broad leaved clover of Flanders, which is on the whole considered the best by European cultivators.

The Flanders clover, however, in our seed stores, is sadly mixed with other *varieties*, and sometimes other *species* of clover. The seeds of the *Trifolium officinale*, or melilot, or yellow Trefoil, are intermixed to so great an extent, that some fields which we have sown with red clover seed, *bought as such in the shops*, are now of a yellow colour from the prevalence of the melilot. The worst of it is, that it is an increasing evil. Ten years since the melilot, or yellow clover, was so uncommon, that we examined it as a botanical novelty.

THE Caledonian Horticultural Society in 1817, sent a deputation into the Low Countries and France to ascertain what improvements had been made in Horticulture or Gardening, during the twenty years in which intercourse had been cut off between Scotland and the Continent by that scourge and disgrace of human nature, war. It was a most praiseworthy example, and the reports of that committee have been published this year, 1823, in an octavo volume full of interesting matter in relation to Gardening, to fruits, and orchards. We shall only have time and room for the insertion of some short articles.

At Bruges in Flanders, proverbially the seat of the most improved agriculture, the committee on the 12th of August, make the following remarks: "In the course of our evening walk, we were attracted by a novel appearance in husbandry, the labours of the seed time and harvest seeming here to be united and contemporaneous. We entered a fine field of luxuriant rye, part of which remained uncut, but a large proportion had been cut down this morning (August 12th.)

The crop had been carried aside ; well rotted dung had been pretty liberally laid on the stubble ; the Flemish plough was now at work ; and to complete this picture of industry, and expedition, a man was actually engaged in sowing turnips on the same portions of the ploughed fields from which the rye crop had been reaped in the morning." This example ought not to be lost upon us. Our sun is much more powerful, and our vegetation more rapid than in Flanders. We know that some farmers do raise their second crops with us ; but may we not carry this system much farther ? We certainly can do it, by limiting the extent of our cultivated grounds, and bestowing greater labour on the quantity we do cultivate.

PROFESSOR VAN MONS OF BRUSSELS.

THE Caledonian committee above mentioned, visited the nurseries of this active and intelligent horticulturist. He is Professor of Chemistry at Louvain, but has turned his attention very extensively to the improvement of fruits, principally on the plan of Mr. Knight, by raising new varieties. Of new varieties of seedling pears, raised chiefly by himself, and Monsieur Duquesne, of Mons, he considers that his collection contains about 800 ; being asked by the committee whether he meant that they were all good, he replied, that there were *that* number worthy of preservation. We must, however, put down a considerable portion of these as favourites from paternal regard, for we do not find that the London Horticultural Society to whom he has sent his best samples have as yet admitted more than half a dozen into the catalogue of good fruits. Still his zeal is worthy of great praise. Our old fruits are running out, they are subject to constantly increasing diseases. They must have been all *first* obtained by seedlings, and when a good variety was thus procured, it

was propagated by grafts. Thus it has been with our Seckle pear, the only known excellent pear ever produced in the United States. It is now in every good garden. But the present age is not content with raising one good sort in a century. It is the fashion to try the powers of nature, and the next generation will see not only a greater variety, but probably enjoy much better kinds than any age which has gone before them.

THE sweet potatoe (*Convolvulus Batatas*) has been of late introduced into culture at Paris, and sent to that market for sale, and has been strongly recommended by Mons. Lelieur in a memoir on that subject. Neither the soil, nor climate of Paris is half as well calculated for this plant, as those of the vicinity of Boston. All the counties of the Old Colony, part of Middlesex, and some of the warm spots in Hampshire are excellently adapted to it. In Worcester and Berkshire it would probably not succeed, except in some favoured spots; but if the horticulturists of Paris have waited 200 years since they were introduced into Spain, it is not surprising that we have so recently brought them into experiment.

A PHENOMENON IN GRAFTING.

AT Brussels, the Committee of the Caledonian Horticultural Society witnessed one of the most extraordinary experiments in grafting; that, of inserting *an entire tree*, on the stump of another. A neighbour, having in the spring season cut down an apple tree, about fifteen feet high, which professor Van Mons considered a desirable kind, and a good healthy tree, he immediately selected a stock of *similar* di-

mensions, and cutting it off near the ground, placed on it by the mode of *peg* grafting, the foster tree ; supported the tree by stakes ; and excluded the air from the place of junction, by plastering it with clay, and afterwards heaping earth round it. The experiment succeeded perfectly ; the tree becoming in the course of the *second* season nearly as vigorous as ever.

Now though we would not recommend this experiment, because it must be very precarious, and seldom useful, yet as being one of the highest triumphs of the horticultural art, we thought it worthy of a place in this Journal. The first thought of transferring from one tree to another a different species of fruit by a naked wooden stem, was undoubtedly bold and happy ; but an attempt to transfer a *whole* tree in this manner, is certainly original.

By *peg* grafting, it must be understood, that mode of grafting which can only be practiced on trees of *exactly* the same circumference, the barks of which respectively will come into perfect contract. A hole is made in the stock, of an inch or more in depth, and the inserted tree or scion, is pared away so as to fit exactly the hole so made. The surfaces of the bark of each are then cut off smoothly, so as that the bark of the inserted tree will fit exactly all round with that of the stock. It is indispensable, that the liber and alburnum, that is the inner bark and the white wood of each tree, should exactly meet. The experiment was more curious than useful, but as a fact in natural history, it is deserving of notice. Few men would probably succeed in the attempt, but that it *can* be done in *any* case, almost staggers our faith ; yet the authority is very respectable.—ED.

RECEIPT FOR DESTROYING CATERPILLARS, USED BY THE SOCIETY OF CHRISTIANS CALLED SHAKERS, AT CANTERBURY, N. H.

“ TAKE equal parts of spirits of turpentine, and train oil ; apply them by means of a swab fixed on a pole, commence

the operation in the spring, (we suppose on the first appearance of nests) when these devouring insects begin to appear, and repeat the operation once a week, till the trees are in blow, and very few will escape with their lives."

Signed F. W. the head of the Family.

We must express our admiration of this receipt, not because of its novelty, for either of the ingredients would be quite sufficient to kill the insects, as will common soap suds from every Monday's wash *most thoroughly*, without train oil or spirits of turpentine; but we admire it, as a specimen of the practice and industry of these citizens. If our farmers would only follow *that part* of the receipt, which requires a *weekly attention*, for three successive weeks, it is immaterial whether they use spirits of turpentine or train oil, or soap suds, or the brush, proposed by Col. Pickering, the evil would be cured at *any* rate. The great difficulty is the neglect to do *any thing*, till after the Caterpillars have covered the trees with nests. Then the labours of the sluggard commence, and *one* tree, (let his receipt be ever so perfect and powerful) will cost as much time and labour as ten trees would have required three weeks sooner. If our farmers would only adopt *that portion* of the receipt, which requires a *weekly attack* on this enemy, the evil would soon cease, and in ten years we should scarce see a caterpillar in the country. By this course continually pursued, we have so much reduced the labour, that we have not one fourth part of the number we had three years ago.—[ED.]

ON THE CULTIVATION OF THE POPPY FOR THE PURPOSE OF PRODUCING OPIUM.

WE shall, on this topic, introduce an extract from a new Massachusetts Scientific Journal, entitled "The Boston Journal of Philosophy and the Arts." Not in any degree interfer

ing with that of Professor Silliman, the Journal in question is intended to introduce to the American public, those articles in foreign publications devoted to Philosophy and the Arts, which may be thought most useful. We meet this stranger with the most hearty, and cordial welcome. Every one who reads much knows that it is impossible in the present state of our country, that the European scientific journals can all of them, or indeed any of them be republished here. They cannot be imported without enormous expense, owing to the inexplicable policy of laying heavy duties on all works, without discriminating those which must have a limited circulation, from those which are read by the great mass. This work is intended to give us a selection from the European publications of those articles which are peculiarly interesting to us, and adapted to our condition and progress. The Journal is under the management of Dr. J. W. Webster, Dr. John Ware, and Mr. Daniel Treadwell, and we cannot have a better pledge of sound discretion which will be exercised in the selections, than the well merited reputation of its joint editors. We most earnestly hope that it will receive that encouragement, which the very attempt deserves, and which is due to the spirited efforts of these scholars, and without which, no scientific exertions can be long successful.

We now shall introduce the notice as to the raising of the Poppy in the cold, ungenial climate of England.

“Messrs. Cowley and Staines of Winslow, Buckinghamshire, have cultivated poppies for opium, with such success, as to induce the belief, that this branch of agriculture is of *national importance*, and worthy of support. In the year 1821 they procured 60 lbs. of solid opium, *equal to the best Turkey opium*, (quere ?) from rather less than four acres and an half of ground. The seed was sown in February, came up in March, and after proper hoeing, setting out, &c., the opium gathering commenced at the latter end of July. The criterion for gathering the opium was, when the poppies hav-

ing lost their petals were covered with a bluish white mould. [With great deference, we should say, that the directions would have been more clear, if they had stated the size of the capsules or seed vessels when the gathering began.] They are then scarified, [or scratched with a pin or knife, Ed.] and the head left till the juice is coagulated, about two hours, when it is removed, and new incisions made. Opium is produced until the third and fourth incisions, and in some instances till the tenth. Ninety-seven pounds were procured at an expense of (one hundred and forty-five dollars) and this being dried in the sun, yielded above sixty pounds of opium. The heads of the poppies were then allowed to dry, and were thrashed, and the seeds, it was expected, as they weighed thirteen hundred pounds, would produce seventy-one gallons of oil. The oil cake was given to cattle and pigs, with great advantage."

REMARKS.

If the cultivation of the Poppy for opium can be considered as an object of national importance in Great Britain, it seems to be certain that it must be so here. Our climate is much better adapted to this plant. Sown in May, its capsules are fit to use in July. They are larger and finer than in England. The variety from which the Turkey opium is obtained is the large single white poppy. The capsules are of the size of a large pigeon's egg. When they have obtained their greatest size, the capsule is to be slit with a pin, or sharp penknife; from the wound issues a milky kind of juice which in two hours thickens, and should then be collected and afterwards dried in the sun. In raising it on a great scale, the poppies should be sown in rows or beds, so as to permit the collectors of the opium to pass between them.

We have no expectation that such extensive experiments will be made in our country, but many curious persons may be disposed to raise a quarter of an acre each. The remarks which have been made are the result of personal observation by

J. L.—*one of the Editors.*

CATTLE SHOW, EXHIBITION OF MANUFACTURES, PLOUGHING MATCH, AND PUBLIC SALE OF ANIMALS AND MANUFACTURES, AT BRIGHTON, MASSACHUSETTS, ON WEDNESDAY AND THURSDAY, THE 15th AND 16th OF OCTOBER, 1823. TO COMMENCE AT NINE O'CLOCK A.M. ON EACH DAY.

THE Trustees of the Massachusetts Society for the Promotion of Agriculture, encouraged by the patronage of the Legislature of this State, intend to offer in Premiums, not only the sum granted by the Government for that purpose, but also the whole amount of the income of their own funds. They, therefore, announce to the public, their wish to have a Cattle Show, and Exhibition of Manufactures, &c. &c. at *Brighton, on Wednesday and Thursday, the 15th and 16th of October, 1823*; and they offer the following Premiums:

FOR STOCK.

For the Best Bull, raised in Massachusetts, above one year old	-	-	-	-	-	\$30
For the next best do. do.	-	-	-	-	-	20
For the next best do. do.	-	-	-	-	-	10
For the best Bull Calf, from 5 to 12 months old	-	-	-	-	-	15
For the next best do. do.	-	-	-	-	-	10
For the next best do. do.	-	-	-	-	-	5
For the best Cow, not less than three years old	-	-	-	-	-	30
For the next best do. do.	-	-	-	-	-	20
For the next best do. do.	-	-	-	-	-	15
For the best Heifer, from one to three years old, with or without calf	-	-	-	-	-	15
For the next best do. do.	-	-	-	-	-	10
For the next best do. do.	-	-	-	-	-	7
For the best Ox, fitted for slaughter, regard to be had to the mode and expense of fattening	-	-	-	-	-	30
For the next best do. do.	-	-	-	-	-	25
For the next best do. do.	-	-	-	-	-	15
For the best pair of Working Oxen	-	-	-	-	-	30
For the next best do. do.	-	-	-	-	-	25
For the next best do. do.	-	-	-	-	-	20
For the next best do. do.	-	-	-	-	-	15

For the next best do. do.	-	-	-	\$10
For the best pair of Spayed Heifers, not less than one year old	-	-	-	25
For the best Spayed Sows, not less than four in number, and not less than five months old	-	-	-	20
The claimant to be entitled to either of these two last premiums, must state, in writing, the mode of operation and treatment, in a manner satisfactory to the Trustees.				
For the best Merino Wethers, not less than six in number, having respect to form and fleece	-	-	-	15
For the next best do. do. do.	.	-	-	8
For the best Native Wethers, not less than six in number do.	-	-	-	10
For the next best do. do. do.	-	-	-	5
For the best Merino Ram, do.	-	-	-	15
For the next best do.	-	-	-	10
For the best Merino Ewes, not less than five in number, do.	-	-	-	20
For the next best do. do. do.	-	-	-	10
For the best Boar, not exceeding two years old	-	-	-	12
For the next best do. do.	-	-	-	8
For the next best do. do.	-	-	-	5
For the best Sow	-	-	-	12
For the next best do.	-	-	-	8
For the next best do.	-	-	-	5
For the best Pigs, not less than two in number, nor less than four months old, nor more than eight	-	-	-	10
For the next best do. do.	-	-	-	5

None of the above animals will be entitled to premiums, unless they are *wholly bred* in the State of Massachusetts.

For the best Ram which shall be imported into this State, after this advertisement, and before the 15th of October next, of the improved Leicester breed of long woolled sheep - - - 75
or a gold medal of that value, at the option of the importer.

For the next best do. do.	-	-	-	50
For the best Ewe, of the same breed, imported under the same terms, and for the like superior qualities	-	-	-	60
For the next best do. do.	-	-	-	40
To the person who shall import into this State, from Europe, a male and female Goat, of the pure Casimere breed	-	-	-	100

The persons claiming these premiums to engage to keep the imported animals within the State.

No animal, for which to any owner one premium shall have been awarded, shall be considered a subject for any future premium of the Society, except it be for an entirely distinct premium, and for qualities different from those for which the former premium was awarded.

Any of the above Stock, when raised and still owned at the time of the exhibition, by the person who raised them, will entitle the claimant to an allowance of ten per cent. in addition. But Sheep, to be entitled to any of the above premiums, must be raised by the person entering them.

FOR AGRICULTURAL EXPERIMENTS.

To the person who shall raise the greatest quantity of Indian Corn on an acre, not less than seventy bushels	\$30
To the person who shall make the most satisfactory experiment, to ascertain the best mode of raising Indian Corn, whether in hills or rows, not less than half an acre being employed in each mode, in the same field, the quantity and quality both of land and manure to be equal and uniform in each mode; all to receive a cultivation requisite to produce a good crop	20
To the person who shall raise the greatest quantity of Vegetables, grain, peas and beans excepted, for winter consumption, of the stock of his own farm, and not for sale, in proportion to the size of the farm and stock kept, having regard to the respective value of said vegetables as food, stating the expense of raising	

the same, and the best mode of preserving the same through the winter	- - - -	30
To the person who shall raise the greatest quantity of winter Wheat on an acre	- - - -	20
To the person who shall raise the greatest quantity of spring Wheat on an acre	- - - -	20
To the person who shall raise the greatest quantity of Barley on an acre, not less than forty-five bushels		20
To the person who shall raise the greatest crop of Mil- let on an acre, cut and cured for hay, the claimant giving evidence of the time of sowing, the quantity of seed sown, and the quantity of hay produced	-	20
To the person who shall raise the greatest quantity of Carrots on an acre, not less than six hundred bushels		20
To the person who shall raise the greatest quantity of Potatoes on an acre, not less than five hundred bush- els,	- . - - -	20
To the person who shall raise the greatest quantity of common Beets on an acre, not less than six hundred bushels,	- - - - -	20
To the person who shall raise the greatest quantity of Parsnips on an acre, not less than four hundred bush- els,	- - - . -	20
To the person who shall raise the greatest quantity of Mangel Wurtzel on an acre, not less than six hun- dred bushels,	- - - - -	20
To the person who shall raise the greatest quantity of Ruta Baga on an acre, not less than six hundred bush- els,	- - - - -	20
To the person who shall raise the greatest quantity of Turnips on an acre, not less than six hundred bushels,		20
To the person who shall raise the greatest quantity of common Turnips, after any other crop in the same season, being not less than four hundred and fifty bushels,	- - - - -	20
To the person who shall raise the greatest quantity of common turnips, after any other crop in the same sea-		

son, being not less than four hundred and fifty bushels,	-	-	-	-	-	20
To the person who shall raise the greatest quantity of Onions on an acre, not less than six hundred bushels,	-	-	-	-	-	20
To the person who shall raise the greatest quantity of Cabbages on an acre, not less than 25 tons weight, free from earth when weighed,	-	-	-	-	-	20
To the person who shall give satisfactory evidence on 'Soiling Cattle,' not less than six in number, and through the whole season, together with a particular account of the food given, and how cultivated,	-	-	-	-	-	30
To the person who shall make the experiment of turning in green crops as a manure, on a tract not less than one acre, and prove its utility and cheapness, giving a particular account of the process and its result	-	-	-	-	-	30
To the person who shall, by actual experiment, prove the best season and modes of laying down lands to grass, whether spring, summer or fall seeding be preferable, and with or without grain on different soils	-	-	-	-	-	30
To the person who shall raise the greatest quantity of dry Peas on an acre, not less than thirty bushels,	-	-	-	-	-	20
To the person who shall raise the greatest quantity of dry Beans on an acre, not less than thirty bushels,	-	-	-	-	-	20
To the person who shall give proof of having produced the largest quantity of dressed Flax, raised on half an acre, not less than two hundred and fifty pounds	-	-	-	-	-	20
To the person who shall take up in the season, on his own farm, the greatest quantity of good Honey, and shall at the same time exhibit superior skill in the management of Bees,	-	-	-	-	-	10
For the best Cheese, <i>not less</i> than one year old, and not less in quantity than one hundred pounds,	-	-	-	-	-	10
For the next best do. do.	-	-	-	-	-	5

For the best Cheese <i>less</i> than one year old,	-	-	10
For the next best do. do.	-	-	5
To the person who shall prove to the satisfaction of the Trustees, that his mode of rearing, feeding and fattening neat cattle is best,	-	-	20
For the next best Butter, not less than fifty pounds,			15
For the next best do. do.	-	-	10
For the next best do. do.	-	-	7
For the next best do. do.	-	-	5

For the greatest quantity of Butter and Cheese, made between the 15th of May, and the 1st of October, from not less than four Cows, the quality of the Butter and Cheese, and the number of Cows to be taken into consideration, and specimens to be exhibited at the Show, of not less than twenty pounds of each, and the mode of feeding, if any thing besides pasture was used, - - - - - 20

To the person who shall prove by satisfactory experiments, to the satisfaction of the Trustees, the utility and comparative value of the cobs of Indian Corn, when used with or without the grain itself, ground or broken, - - - - - 20

For the best specimen of Cider, not less than one barrel, made in 1822, manufactured by the person who shall exhibit the same, and from apples grown on his own farm - - - - - 20

For the second best barrel, - - - - - 15

[These premiums will be continued in future years. Persons claiming them must state, in writing, their process of making and managing their Cider, and the kind of apples used.]

For the best specimen of Currant Wine, not less than one gallon, exhibited by any person who shall have made not less than 30 gallons in the same season in which that which shall be exhibited was made, (a statement to be given, in writing, of the process of making the same,) - - - - - 10

For the next best do. do. - - - - 5

To entitle himself to either of the Premiums for Grain or Vegetable crops, the person claiming, must cultivate a tract of at least one acre in one piece, with the plant or production for which he claims a premium, and must state, in writing, under oath of the owner, and of one other person, (accompanied by a certificate of the measurement of the land by some sworn surveyor,) the following particulars :

1. The state and quality of the spring of 1823.
2. The product and general state of cultivation and quantity of manure employed on it the year preceding.
3. The quantity of manure used the present season.
4. The quantity of seed used, and if Potatoes, the sort.
5. The time and manner of sowing, weeding, and harvesting the crop, and the amount of product, ascertained by actual measurement, after the whole produce for which a premium is claimed, is harvested, and the entire expense of cultivation.

And in relation to all vegetables, except Potatoes, Onions, and common Turnips, the fair average weight of at least twenty bushels must be attested ; and if there be hay scales in the town in which raised, not less than three average cart loads must be weighed.

The claim under this head, together with the evidences of the actual product, must be delivered, free of expense, to Benjamin Guild, Esq. in Boston, Assistant Recording Secretary of this Society, on or before the first day of December next—the Trustees not intending to decide upon claims under the head of Agricultural Experiments, until their meeting in December.

FOR INVENTIONS.

To the person who shall use the Drill Plough, or Machine, and apply it most successfully to the cultivation of any small Grains or Seeds, on a scale not less than one acre, - - - - - \$20

To the person who shall invent the best machine for pulverizing and grinding Plaster to the fineness of

twenty-five bushels per ton, and which shall require no more power than a pair of oxen or horse, to turn out two tons per day, and so portable that it can be removed from one farm to another without inconvenience, - - - - - 30

To the person who shall produce, at the Show, any other Agricultural Implement, of his own invention, which shall, in the opinion of the trustees, deserve a reward, a premium not exceeding twenty dollars, according to the value of the article exhibited, - - - 20

In all cases proofs must be given of the work done by the Machine, before it is exhibited; and of its having been used and approved by some practical farmer. Persons who have taken out Patents for their inventions, are not thereby excluded from claiming any of the above premiums.

FOR FOREST TREES.

For the best plantation of White Oak Trees, not less than one acre, nor fewer than one thousand trees per acre, to be raised from the acorn, and which trees shall be in the best thriving state, on the first of September, 1823, - - - - - \$100

For the best plantations of White Ash, and of Larch Trees, each of not less than one acre, nor fewer than one thousand trees per acre, to be raised from the seeds, and which trees shall be in the best thriving state, on the first of September, 1823, - - - 50

For the best Live Hedge made of either the White or Cockspur Thorn, planted in 1820, not less than one hundred rods, and which shall be in the best state in 1823, - - - - - 50

To the person who shall have planted out on his farm, since the spring of 1815, the greatest number of Apple Trees, not less than one hundred in number, and who shall exhibit to the trustees, at the Show in 1827, satisfactory evidence of his having managed them with care and skill, - - - - - 50

FOR DOMESTIC MANUFACTURES.

To the person or corporation who shall produce the best specimen of fine Broadcloth, not less than 1 5-8 yards wide, exclusive of the list, forty yards in quantity, and dyed in the wool,	\$20
For the second best do. do. do.	15
For the best superfine Cassimere, not less than 3-4 yard wide, nor less than forty yards in quantity,	12
For the second best do. do. do.	8
For the best superfine Sattinet, 3-4 yard wide, not less than 50 yards	8
For the second best do. do. do.	5
For the best Sole Leather, not less than five sides,	10
For the second best do. do.	5
For the best dressed Calve Skins, not less than twelve in number	10
For the second best do. do.	5

FOR HOUSEHOLD MANUFACTURES.

For the best Woollen Cloth, 3-4 yard wide, not less than twenty yards in quantity,	\$12
For the second best do. do.	8
For the best double milled Kersey, 3-4 yard wide, not less than twenty yards in quantity,	12
For the second best do. do.	8
For the best Coating, 3-4 yard wide, not less than 20 yards in quantity,	8
For the second best do. do.	6
For the best Flannel, 7-8 yard wide, not less than 45 yards in quantity,	10
For the second best do. do.	7
For the best yard wide Carpeting, not less than 30 yards in quantity,	15
For the second best do. do.	7
For the best 5-8 yard wide Stair Carpeting, not less than 30 yards in quantity,	10
For the second best do. do.	7

For the best pair of Blankets, not less than 3-4 wide and 10-4 long,	- - - - -	6
For the second best do. do.	- - - - -	4
For the best Woollen Kuit Hose, not less than 12 pair in number,	- - - - -	5
For the second best do. do.	- - - - -	3
For the best Worsted Hose, not less than 12 pair in num- ber,	- - - - -	5
For the second best do. do.	- - - - -	3
For the best Men's Half Hose, (woollen) not less than 12 pair in number,	- - - - -	4
For the second best do. do.	- - - - -	2
For the best Men's Woollen Gloves, not less than 12 pair in number,	- - - - -	5
For the second best do. do.	- - - - -	3
For the best Linen Diaper, 5-8 yard wide, not less than 30 yards in quantity,	- - - - -	5
For the second best do. do.	- - - - -	3
For the best yard wide Diaper, (for table linen) not less than 30 yards in quantity,	- - - - -	10
For the second best do. do.	- - - - -	5
For the best specimen of Sewing Silk, raised and spun in this State, of good fast colours, not less than one pound,	- - - - -	5
For the second best do. do.	- - - - -	3
For the best Linen Cloth (for shirting or sheeting) one yard wide, and twenty-five yards long,	- - - - -	8
For the second best do. do.	- - - - -	4
To the person who shall produce the best specimen of any Cotton fabrics in private families, not less than five pieces,	- - - - -	20

All the above Manufactures, (except when of Cotton) must be of the growth and manufacture of the State of Massachusetts. And all Manufactures, when presented, must have a private mark, and any public or known mark must be completely concealed, so as not to be seen, or known by the

Committee, nor must the Proprietors be present when they are examined; in default of either of these requisitions, the articles will not be deemed entitled to consideration or premium.

Animals, Manufactures, or Articles, may be offered for premium at Brighton, notwithstanding they may have received a premium from a County Agricultural Society.

It is understood, that whenever merely from a want of competition, any of the claimants may be considered entitled to the premium, under a literal construction, yet if, in the opinion of the Judges, the object so offered is not deserving of any reward, the Judges shall have a right to reject such claims. Persons to whom premiums shall be awarded, may, at their option, have an article of Plate, with suitable inscriptions, in lieu of money. Premiums will be paid within ten days after they shall be awarded.

That in any case in which a pecuniary premium is offered, the Trustees may, having regard to the circumstances of the competitor, award either one of the Society's gold or silver medals in lieu of the pecuniary premium annexed to the several articles.

That if any competitor for any of the Society's premiums shall be discovered to have used any disingenuous measures, by which the objects of the society have been defeated, such person shall not only forfeit the premium which may have been awarded to him, but be rendered incapable of being ever after a competitor for any of the Society's premiums.

All premiums not demanded within six months after they shall have been awarded, shall be deemed as having been generously given to aid the funds of the Society.

PLOUGHING MATCH.

On the second day of the Cattle Show, viz. the 16th day of October, Premiums will be given to the owners and ploughmen of the three Ploughs, drawn by two yoke of oxen, and to the three Ploughs drawn by one yoke oxen, which shall be adjudged, by a competent Committee, to have performed the

best work with least expence of labor, not exceeding half an acre to each plough. Notice will be given in the public Papers, at least six weeks before said day, that a piece of ground has been provided for twenty ploughs—ten double and ten single teams; and that entries may be made of the names of the competitors until the morning of the 16th. Preference will be given to those who enter first; but if, on calling the list at the hour appointed, precisely, those first named do not appear, the next in order will be preferred. There will be two Committees, of three persons each—one to be the judges of the ploughing by the double teams, the other of the ploughing by the single teams—the latter to have assigned to them a part of the field distinct from that of the double teams.

Premiums as follows, (being the same for the double and single teams.)

First Plough	\$15	Second Plough	\$10	Third Plough	\$6
Ploughman	3	Ploughman	5	Ploughman	3
Driver	4	Driver	3	Driver	2

In each case, if there be no Driver, both sums to be awarded to the Ploughman.

The persons intending to contend for these Prizes, must give notice, in writing, to S. W. POMEROY, or GORHAM PARSONS, Esq's of *Brighton*. The competitors will also be considered as agreeing to follow such rules and regulations as may be adopted by the Committee on the subject. The ploughs to be ready to start at 9 o'clock, A. M.

The result of the last Ploughing Matches at *Brighton*, and the satisfaction expressed by so many of their agricultural brethren, will induce the Society to continue these premiums annually, in connexion with the Cattle Show, as an efficacious means for exciting emulation and improvement in the use and construction of the *most important instrument* of agriculture.

Persons intending to offer any species of Stock for premiums, are requested to give notice thereof, either by letter

(post paid) stating the article, or to make personal application to JONATHAN WINSHIP, at *Brighton*, on or before the 14th day of October, and requesting him to enter such notice or application, so that tickets may be ready at 9 o'clock on the 15th. No person will be considered as a competitor who shall not have given such notice, or made such application for entry, on or before the time above specified.

All articles of manufactures and inventions, must be entered and deposited in the Society's Rooms on Monday, the 13th of October, and will be examined by the Committees on Tuesday, the 14th, the day before the Cattle Show; and no person but the Trustees shall be admitted to examine them before the Show. The articles so exhibited, must be left till after the Show, for the satisfaction of the public.

The applicants will be held to a rigid compliance with this rule relative to entries, as well as to the other rules prescribed.

The examination of every species of stock, (except working oxen) will take place on the 15th; and the trial of Working Oxen, and Ploughing Match, on the 16th of October.

The Trustees also propose to appropriate, on the second day of the Cattle Show, their Pens for the public sale of any Animals, that have been offered for premium, and also of any others, that are considered by them, as possessing fine qualities; and their Halls for the public sale of Manufactures. Both sales to take place at half past eleven o'clock, precisely. And for all Animals or Manufactures, that are intended to be sold, notice must be given to the Secretary, before 10 o'clock of the 16th. Auctioneers will be provided by the Trustees.

By order of the Trustees,

R. SULLIVAN,	} Committee.
J. PRINCE,	
G. PARSONS,	
E. H. DERBY,	

January, 1823.

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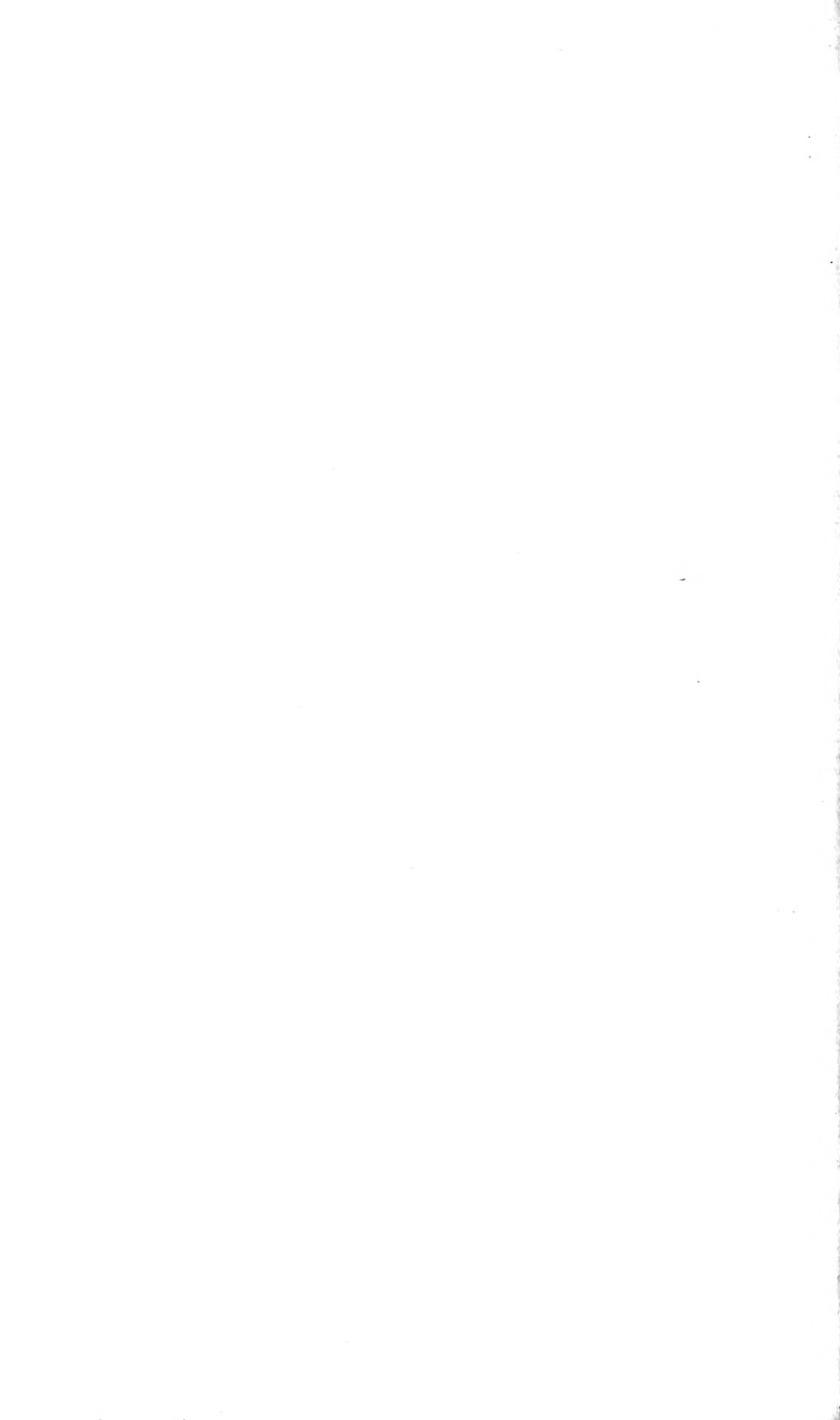
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Extracts from the last number of the Massachusetts Agricultural Repository and Journal. June, 1822.

In our last number, we mentioned, that Messrs. WELLS & LILLY had caused this valuable, and as we think, standard work to be revised* at their own expense, and had put it to press. A wish to render it as perfect as they could, to incorporate in it most of the improvements which have taken place in agriculture since the publication of the second edition, and to expunge from it all superfluous matter, or opinions which are now exploded, has delayed the work to this time.

It will probably appear in the course of a few weeks. We have no other interest in introducing this subject again to the notice of our readers and subscribers, than the wish to diffuse correct agricultural knowledge. Dr. Deane's work was certainly as good a compendium for its size, as could be found in Europe at the time it was published. It had the special merit, for us, of adapting European modes of culture to our soil and climate. Even in its improved state, it is not pretended that the work supersedes the necessity, with intelligent cultivators, of an extensive agricultural library, but it is calculated, and well calculated, to aid the experience, and enlighten and direct the practice of all descriptions of farmers. It has been necessary so far to enlarge it, in consequence of the great modern improvements in agriculture, that it may prove too expensive for small farmers, but we think all farmers in easy circumstances will find it a very cheap book. Many things will not be new to them, but even these they will find enforced by new reasons and arguments. Though written principally with a view to the New-England States there is no part of the United States in which it will not be found of great value, and perhaps it may not be and ought not to be its smallest recommendation to the farmers of the United States, that excepting the Rev. Jared Elliot's small tract, it was the earliest and by far the most respectable agricultural work ever published in the United States.

* A great part of the revision and corrections were made by Thomas G. Fessenden, Esq.



